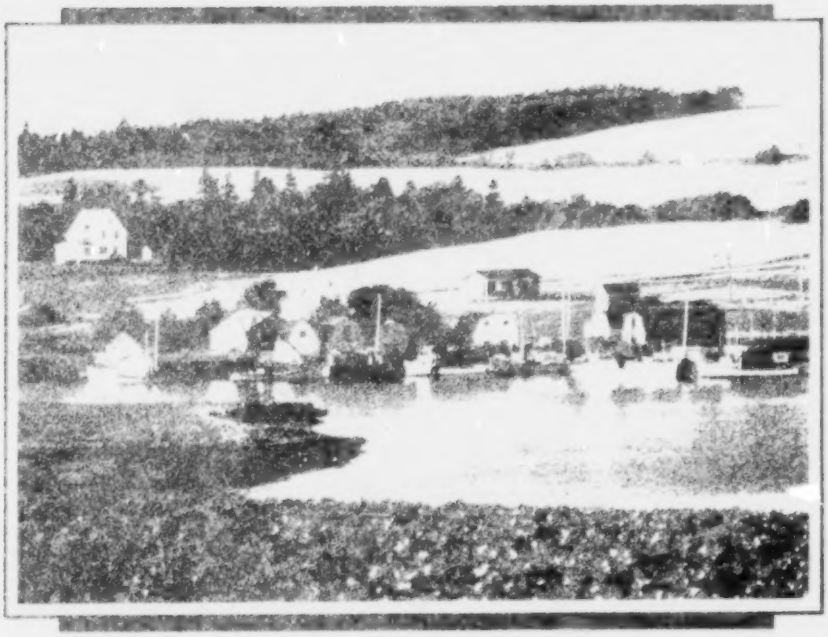
A CONSERVATION STRATEGY



For
PRINCE EDWARD ISLAND

A CONSERVATION STRATEGY FOR PRINCE EDWARD ISLAND

Prepared for Executive Council by

The Co-ordinating Committee for Conservation

Charlottetown,

Prince Edward Island

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HIGHLIGHTS AND MAJOR DIRECTIONS

'We travel together, passengers on a little spaceship, dependent on its vulnerable resources of air, water and soil... preserved from annihilation only by the care, the work and the love that we give our fragile craft.'

Adlai E. Stevenson

Living on an island helps to focus attention on the dependency that we have on our natural resources, and how interrelated are all aspects of our natural environment. We could thus begin the report anywhere; we choose to start with farming because of its traditional and modern importance, and because problems with the soil and the way that it is used affect many other resources.

Land and Soil: We believe that soil erosion, particularly related to row-crop production, is our most serious environmental problem. Soil degradation increases the costs of food production; streams and estuaries are profoundly affected by the wash from unprotected land.

We recommend a series of actions designed to alleviate the erosion problem. In particular, a penetrating examination of present programs is needed, together with a commitment to fund soil conservation at whatever level is necessary in order to get significant improvement.

Woods and forestry: Present efforts to improve forest management are commendable. It is important that great care be taken so that increased activity in our woodlands does not lead to additional soil erosion or to significant loss of wildlife habitat. Crown lands in particular should be models of integrated forest management.

Roads and Ditches: Roadside ditches are major conduits for the transportation of silt from uplands to streams. Road construction and maintenance are significant contributors to the siltation problem. The Department of Transportation and Public Works must be a key player in reducing the effects of erosion on our water bodies.

We recommend a series of steps, such as increased attention to roadside stabilization and more timely scheduling of road operations, which will improve the situation.

Streams and estuaries: Our surface waters have been treated casually for too long; they show the effects of siltation and other forms of pollution. There is an urgent requirement to reduce the level of pollutants now entering the streams.

We recommend a number of programs aimed at stream protection and improved watershed management. We suggest that existing techniques of habitat restoration can produce early improvements in the quality of our water bodies.

Groundwater: The Island is unique in Canada in terms of its dependency on the hidden resource of groundwater. In recent years we have seen many indications of developing problems with this resource; contamination with pesticides, fuel oil, gasoline or other pollutants is not rare.

We recommend improved planning for water use and changes in legislation such as the Well Drillers' Act as steps toward increased protection for groundwater.

The Island landscape, coastal zone and the need for planning: Environmental considerations must play a greater role in the land use planning process, particularly in sensitive areas such as the coastal zone. Strip development and the needless waste of good farmland must be addressed.

We recommend a review of the Planning Act and its regulations as well as increased consideration in official plans for environmental protection.

The preceding paragraphs may lead the reader to believe that we have become fixated on environmental problems within the province, and that we have joined the 'Doom & Gloom' club. This is not so: we believe that environmental protection and conservation efforts are not only necessary but are also opportunities

for the creation of meaningful jobs. For instance, our streams (properly managed) can return many recreational hours of fishing, and generate many recreational dollars from both Islanders and visitors. Our estuaries are becoming increasingly important in aquaculture as well as in recreation - once again proper management and planning will pay. We outline other opportunities throughout this report. The bottom line is that conservation pays in the long term; investments in jobs, improved planning, increased care are all not only good in terms of a healthy and attractive environment, they are good economically as well.

A major concern voiced by literally all of the committee members and others associated with the development of this strategy relates to environmental/resource education and public awareness. In spite of some good programs and dedicated teachers, we strongly believe that students in our schools are not learning nearly enough about our major resources, of their value, of their fragility and of their critical importance in environmental and economic affairs. We believe that any efforts towards better resource planning and management will ultimately fail unless supported by an educated and concerned citizenry.

We recommend a series of steps aimed at increased public awareness of resources and environment. In particular we strongly recommend an independent review of resource and

environmental education in our schools, and that steps be taken to improve curriculum, programming and teacher education in this vital area.

Finally, we suggest the need for new structures within the province. The interrelated nature of our resources requires more co-ordination and liaison among government departments (federal, provincial and municipal) than in the past if the conservation strategy is to succeed.

We recommend the appointment of a Provincial Strategy Co-ordinator who will be the focus for the implementation of the strategy. The co-ordinator would be responsible for maintaining its momentum.

Much work is needed to rehabilitate our streams and estuaries, to enhance wildlife populations and to provide new opportunities in tourism. Joint efforts between government and community and volunteer groups are essential.

We recommend the establishment of a Conservation Centre to promote and co-ordinate habitat restoration work. Initially, the centre would concentrate on water systems but, over time, it would expand its scope to a broader range of resource projects.

In addition, we suggest the need for two councils, a Provincial Conservation Council and a Water Resources Advisory Council, with members drawn largely from the private sector. These councils would ensure co-ordination between government and the public at the provincial level. Figure 1 shows our idea of how the conservation strategy should work.

A conservation strategy is a plan for the wise use of our resources. It demonstrates that conservation and economic development need not conflict but can proceed in harmony. We believe that this report suggests a path leading to a goal of sustainable development. If we follow that path, future generations of Islanders will derive their livelihood from the same resource base that we use today.

FIGURE 1 - PROPOSED FRAMEWORK FOR CONSERVATION STRATEGY

EXECUTIVE COUNCIL
PROVINCIAL CONSERVATION COUNCIL (Advisory Body on broad environmental issues)
STRATEGY CO-ORDINATOR (Provides liaison and co-ordination within and outside government)
WATER RESOURCES ADVISORY COUNCIL (Advisory body on surface water policies and mediates conflicts among user groups)
GOVERNMENTAL DEPARTMENTS AND AGENCIES (Provides assistance to conservation centre)
CONSERVATION CENTRE (Centre for advice, assistance, co-ordination, supplies and equipment for community and volunteer group projects)
COMMUNITY AND VOLUNTEER GROUPS (Develop and carry out conservation projects (soil, water, landscape, etc.) with assistance of Conservation Centre)
SPECIFIC CONSERVATION PROJECTS (Stream rehabilitation, semi-natural rearing facilities for salmon and trout, trail development, etc.)

I INTRODUCTION

Prince Edward Islanders enjoy an environment that is the envy of most other Canadians. We have large expanses of productive farmland, streams and estuaries that abound in fish, clean beaches, smog-free skies and pure drinking water. This is, indeed, a fair isle.

For more than two hundred years Islanders have wrested a living from the land and its surrounding waters. Our economy has always been based upon renewable resources. Wisely used, these resources can provide a basis of our livelihood for centuries to come.

The quality environment that we enjoy today cannot be taken for granted. Even to the casual observer there are increasing signals that all is not right. In the spring many streams run red with silt washed from bare farm fields. Traces of Temik in well water raise questions about our use of pesticides and the quality of our groundwater. The West River goes dead in mid-summer, a sign of serious problems in our estuaries.

We ignore these signals at our peril. As evidence we need look only to the industrialized heart of the continent where rivers are grossly polluted, large acreages of rich farmland have been squandered and factories continue to spew harmful substances into the atmosphere.

CONSERVATION STRATEGIES

We depend heavily upon our natural resources, both for our living and for our quality of life. If future generations are to continue to depend upon those resources, we believe that we need to pause now to assess our present position and to determine where we should be going in the future.

A conservation strategy is a plan of actions for directing the management of our resources to ensure that they will be still available for use long after we have passed from the scene. It is, in its most simple form, a plan for the wise use of our resources.

It can be adapted to any size of area or level of government. At the global level, for example, we have the World Conservation Strategy, a broad, general consensus on sustainable development endorsed by the Canadian government and thirty-three other nations.

In Canada the use and management of natural resources are controlled largely by the provinces. Consequently, the only effective conservation strategies will be those developed by the provinces. In this province the P.E.I. Wildlife Federation has been stressing the need for a provincial conservation strategy for several years. In June of 1986 the government of Prince Edward Island authorized the preparation of such a strategy. This report is the result.

PREPARATION OF THE STRATEGY

Work on the strategy began in the summer of 1986. A core committee consisting of nine people was formed to direct its preparation. It met throughout the summer to set up a framework.

The committee determined that the environmental problems facing the province could best be considered under the following headings:

Soil Degradation and Conservation

Water and Wildlife Management

Water Quality and Pollution Control

Landscape Protection

Coastal Zone Management

Five working groups were established, made up of members drawn from provincial and federal governments, interest groups and the private sector. They were asked to identify major problems and to come up with workable solutions.

Each group met five to eight times, beginning in September, and completed their reports by January, 1987. The names of the members of the core committee and the working groups are listed in Appendix B. Their recommendations form the heart of this report.

II AGRICULTURE

Soil degradation, primarily erosion, is the single most important resource problem facing the province. Farming is our basic industry; soil erosion threatens the resource on which it depends.

Soil degradation represents a cost to farmers in terms of loss of fertilizers, organic matter and long term lowered productivity. Its downstream effects are equally important, in terms of clogged ditches, silted streams and harmful effects on fish living in waters overenriched by fertilizers or polluted by land wash and pesticides.

We have known about the consequences of soil erosion for many years. We have yet to put in place effective methods to control it.

BACKGROUND

Farming on Prince Edward Island depends totally on a few inches of topsoil. Soil forms very slowly from the underlying glacial debris; undisturbed by man, it erodes equally slowly. With good management, it may be farmed indefinitely without major problems.

Certain cropping practices, especially those related to

row-cropping of potatoes and tobacco, rapidly degrade the soil. The amount of organic matter binding soil particles together declines, acidity may increase and the actions of water and wind on bare soil cause greatly accelerated erosion.

Many factors affect the amount of soil erosion occurring in any place. The slope of the land, snow and rainfall patterns, the crop cover or the lack of it and the structure of the soil are all important. Long, narrow field patterns that make cross-slope cultivation difficult also contribute to the problem. In any case, erosion degrades land, making cropping more expensive or eventually impossible. Costly fertilizers and pesticides are lost and slopes are torn by gullies.

The major task in soil conservation is to develop farming practices that minimize soil loss through erosion. Reducing damage from erosion depends upon controlling surface run-off, managing crops so that the soil is bare as little as possible (especially in winter and spring) and maintaining good soil structure with appropriate crop rotations. Effective control lies in practicing farming methods designed to maintain the soil, not mine it.

The soil erosion problem can be reduced only with the full cooperation of provincial and federal Departments of Agriculture. The province should continue to strongly support the establishment of a co-ordinated soil and water conservation

program within a National Agricultural Strategy. The efforts of the P.E.I. Land and Water Conservation Committee, which involves both federal and provincial officials, should be encouraged.

We believe that soil degradation is not simply a problem for the farmer. Without soil the farmer loses his livelihood and society loses its food supply. Thus soil degradation becomes a concern for society as a whole. It must become aware, concerned and prepared to pay for solutions.

RECOMMENDATIONS

1. Existing Soil Erosion Programs

Present programs designed to assist farmers to control soil erosion are not very effective. It has been reported to us that, since 1984, the Soil and Water Conservation Program (ERDA) has been used to provide erosion control for less than 25 hectares of land in this province. We are unable to determine whether the problems are those of eligibility criteria, too high a cost for the farmer, inadequate information, or other factors. The fact is that most of the funds expended have been for tile drainage and not for direct erosion control.

THE EXISTING SOIL AND WATER PROGRAM SHOULD BE REVIEWED WITH A VIEW TO DETERMINING REASONS FOR ITS LACK OF ACCEPTANCE. NECESSARY CORRECTIVE ACTION SHOULD THEN BE TAKEN.

IN ANY REVISION OF PRESENT PROGRAMS OR NEW PROGRAMS TO BE DEVELOPED, REALISTIC TARGETS SHOULD BE SET FOR HECTARES OF LAND TO BE BROUGHT UNDER THE PROGRAMS EACH YEAR. IF A PROGRAM DOES NOT MEET THE TARGET WITHIN A TWO OR THREE YEAR PERIOD, THEN THE PROGRAM SHOULD BE REVIEWED AGAIN TO DETERMINE THE BASIS FOR ITS LACK OF ACCEPTANCE.

2. Research and Demonstration

Although some research on erosion has been done, both in this province and elsewhere, we believe that it has not focussed enough on the problem within the context of economic farming. More needs to be done on an on-farm basis.

Research on soil problems must increase, with a focus on on-farm problems such as those involving bare-soil-over-winter, machinery adaptation and developing economic rotations.

In many cases, farmers themselves are valuable sources of research ideas. Farmers often have good ideas on conservation but are unable to articulate them to fit particular funding projects. Research and extension services should seek out these ideas for inclusion in soil erosion programs.

THE GREATEST SINGLE PROBLEM IN SOIL CONSERVATION IS THE

BARE-SOIL-OVER-WINTER PROBLEM ASSOCIATED WITH POTATO GROWING. IT MUST BE ADDRESSED BOTH IN TERMS OF RESEARCH AND EFFECTIVE DEMONSTRATION PROJECTS DEALING WITH COVER CROPPING, SOIL MULCHING, WATER CHANNELING AND ROTATION PRACTICES. A SEARCH OF EXISTING TECHNOLOGY AND RESEARCH NEEDS TO BE CARRIED OUT ON POTATO MACHINERY. PRESENT HARVESTERS OPERATE BEST UP AND DOWN SLOPES; ONES THAT OPERATE EFFICIENTLY ACROSS SLOPES WOULD DECREASE RUN-OFF PROBLEMS.

3. Extension Services

We believe that the Department of Agriculture must upgrade its extension services to farmers with additional expertise in soil conservation. Given the extremely serious long term effects of the problem, the Department must ensure that soil conservation has a higher priority than at present. Extension needs to focus upon the development of a sustainable agriculture, not just productivity increases for specific crops.

What is needed is more people with a sound training in soil science and with a sound grasp of the practicalities of farming. Soil conservation specialists should be out in the field, convincing farmers of what needs to be done.

Greater use should be made of the Soil and Crop Improvement Associations. They require a greater continuity and

stability of funding so that demonstration projects can be expanded. We believe that most farmers will take up new conservation practices only when they can see practical results for their own farms.

EXTENSION SERVICES OF THE DEPARTMENT OF AGRICULTURE SHOULD BE UPGRADED TO PROVIDE GREATER EXPERTISE IN SOIL CONSERVATION. MORE ASSISTANCE SHOULD BE PROVIDED TO SOIL AND CROP IMPROVEMENT ASSOCIATIONS.

4. Assistance to Farmers

There is general agreement that most conservation measures are economic only over the long term, while farmers find themselves in a short term planning framework. Governments must be ready to fund programs now at whatever level is necessary to get conservation practices in place on farms. With high funding levels government can insist that farmers continue the practices and maintain structures.

In the long term, the boom and bust cycle of potato prices makes it difficult to practice soil conservation. Government should encourage and assist a supply management program that would provide stable returns to producers and allow them to adopt a long term planning framework.

GOVERNMENT MUST BE READY TO FUND SOIL CONSERVATION PROGRAMS AT WHATEVER LEVEL IS NECESSARY TO ENSURE THAT CONSERVATION

PRACTICES ARE IN PLACE ON FARMS. FINANCIAL AID PACKAGES MUST BE AVAILABLE TO ALL FARMERS WHO WISH TO IMPROVE THEIR SOIL CONSERVATION PRACTICES, ON TERMS THAT ALLOW THE AVERAGE FARMER TO USE THEM.

SUPPLY MANAGEMENT PROGRAMS THAT WOULD PROVIDE STABLE INCOMES TO PRODUCERS SHOULD BE SUPPORTED.

In conclusion, we reiterate our belief that solving the soil degradation problem is the major key to improved environmental quality on Prince Edward Island. We make specific recommendations to guide and assist farmers to this end. Further, we suggest that, as part of the strategy of improving land use, CODES OF GOOD PRACTICE be developed by farm groups and experts, and that these codes be used as guidelines and as part of the educational/ extension effort carried out here. Such codes need not be elaborate; many groups use this approach to a kind of 'self-policing' of their members. The codes might be regarded as intermediate between legislation and simple persuasion in the list of approaches to the problem.

III FORESTRY

The forests of the province are a neglected resource. They cover almost half our land area, yet their contribution to the economy, in terms of jobs and income, is relatively small. Properly managed, they could, in time, become the mainstay of a small but thriving industry. In 1985, retailers of building products in the province sold or used 15 million board feet of graded lumber, yet only 3 percent was of local origin. Given availability, quality and a competitive price, Island lumber could fill half that market.

Important as they could become for lumber and fuel, forests already play an important, but often unrecognized, role in other resource-related activities. Woodlots and hedgerows are a major element in the rural landscape, vital to our quality of life and to the tourist industry. They are an important habitat for upland game and other wildlife species. Soils covered by forests remain relatively undisturbed by erosion. Along streams forests act as a green belt to sieve out pollutants and as wildlife corridors and habitats for many species. For these reasons forestry would be an important part of the conservation strategy even if the merchantable value of the forests was slight.

BACKGROUND

Throughout the nineteenth century forestry was one of this

province's major industries. Sawmills produced lumber for the domestic and export market. Shipbuilding was carried on in most small Island ports.

As a consequence most of the better timber was removed. Natural regeneration occurred from the poorer stock that remained. The result is forests that are seriously impoverished after generations of highgrading for timber and fuel wood. Poor growth rates, the result of past neglect and overexploitation, leave forestry here in a position of disadvantage in comparison to other provinces.

In this century, most of the land abandoned by agriculture has reverted to thickets of white spruce. White spruce on abandoned land is shortlived. Over the next few decades, as these forests die, a large proportion of the Island's softwood resources will suffer pest infestations and the likelihood of increasing fire hazards.

Unlike the situation in other provinces where Crown lands licensed to private companies constitute the basis of the forest industry, in P.E.I. most forest land is under private ownership. This means that government has little direct control over forest use; its efforts must be concentrated in providing the stock for reforestation and in extension work with landowners.

Although attempts to restore the Island's forests began in

1952, a major interest in a renewed industry is a product of the last fifteen years, associated partly with a growing demand for fuel wood. Government efforts over this period have focussed upon reforestation, tree improvement, access roads and, in particular, a Private Land Forest Management Assistance Program.

Efforts to put forestry on a sound footing are now well underway. A five year Forest Development Agreement signed by the province and the federal government in 1983 called for a twenty year Forest Resource Development Program Plan. The plan was drafted in 1986 and is being subjected to public review now. The plan is designed to improve the productivity of Island forests, within a context of sustained development. In general terms, we believe the plan to be sound, provided sufficient attention is paid to forests as they relate to wildlife, soil erosion and the landscape.

The success of recent efforts to assist sound forestry practices on private lands is encouraging. We believe that funding and assistance to private owners should continue at present levels. Reducing financial assistance will discourage owners from continuing participation in forestry programs.

RECOMMENDATIONS

1. Twenty Year Forest Development Plan

The goals of the plan are to:

(i) restore the productive capacity of Island forests through a co-ordinated approach to sustained yield management that includes stand improvement, effective utilization of high and low quality resources, expansion of the forest land base and increased participation of private woodlot owners. It also ensures continuation of an even distribution of softwood, hardwood and mixed cover types.

(ii) encourage the development of provincial self-sufficiency in graded lumber, forest-based energy and other resources.

THE PROVINCE SHOULD ADOPT THE TWENTY YEAR PLAN IN PRINCIPLE, SUBJECT TO MODIFICATIONS RESULTING FROM THE PUBLIC REVIEW PROCESS AND THE RECOMMENDATIONS OUTLINED BELOW. THE PLAN SHOULD BE REVIEWED PERIODICALLY THROUGHOUT ITS DURATION.

2. Preventing Soil Erosion

Increasing use of the forests carries a potential for an increase in soil erosion. The construction of access roads, bridges and culverts, as well as the use of heavy machinery could result in increased stream siltation. Care must be taken that this does not occur.

EXISTING STANDARDS AND GUIDELINES SHOULD CONTINUE TO BE ENFORCED IN CONSTRUCTION OF ACCESS ROADS, BRIDGES AND

CULVERTS IN FORESTS, AND IN THE PREPARATION OF SITES FOR PLANTING AND HARVESTING, TO MINIMIZE SOIL EROSION FROM ACTIVITIES WITHIN THE FOREST.

3. Enhancing Wildlife

Forests exist for more than simply the production of wood. They are also significant as habitat for wildlife. Minor changes to forest management plans can result in greatly improved wildlife habitat.

FOREST MANAGEMENT PLANS AND PROGRAMS SHOULD CONTAIN GUIDELINES FOR WILDLIFE IMPROVEMENT. FORESTRY EXTENSION WORKERS SHOULD BE AWARE OF AND PROMOTE WILDLIFE ENHANCEMENT WHEN ADVISING PRIVATE WOODLOT OWNERS AND WHEN WORKING ON CROWN LANDS.

4. Hedgerow and Greenbelt Programs

Hedgerows and greenbelts protect land from wind erosion, help to stabilize stream banks and provide wildlife habitat. We believe that the present Hedgerow/Shelterbelt Planting Program is an excellent start in the right direction.

THE HEDGEROW/SHELTERBELT PROGRAM SHOULD BE ENHANCED TO PROVIDE GREATER PUBLIC AWARENESS OF ITS VALUE AND TO ENSURE THAT THOSE RECEIVING STOCK PLAY THEIR PART DURING THE ESTABLISHMENT OF THE STOCK. THE USE OF GREENBELTS FOR

STREAM BANK STABILIZATION AND AS WILDLIFE HABITAT SHOULD BE PROMOTED.

THE PROGRAM SHOULD INCLUDE PRODUCTION OF DESIRABLE SPECIES TO MEET THE NEEDS OF AN EXPANDED GREENBELT PROGRAM. CROWN WOODLOTS SHOULD BE USED AS NATURAL SOURCES FOR LARGER DESIRABLE SPECIES. RENOVATION OF EXISTING HEDGEROWS SHOULD BE PROMOTED, AS WELL AS THE ESTABLISHMENT OF NEW ONES.

5. Crown Land Reserve

Forested Crown lands present a special opportunity for government to develop, practise and demonstrate integrated resource management. Where possible, Crown lands should be managed in a way that enhances adjacent blocks of privately-held land.

MANAGEMENT PLANS FOR CROWN LANDS, INCORPORATING SOUND PRINCIPLES OF INTEGRATED RESOURCE MANAGEMENT, SHOULD BE IMPLEMENTED WITH ADEQUATE RESOURCES AND SHOULD BE CONSIDERED AS A COMPONENT OF THE TWENTY YEAR FOREST DEVELOPMENT PLAN.

6. Species Balance

Even though silvicultural techniques are well known and applied in this province, it still remains much easier to get high survival rates from conifer seedlings than from hardwood seedlings. We must remember, however, that much

of the present farmland was once covered with hardwood forests; the percentage of Island forests now under conifers is unnaturally high. One such conifer, the white spruce, which grows aggressively in almost pure stands on abandoned farmland, now poses problems because of its unusually short life span on such sites. Problems of pest infestation and dangers posed by forest fires arise in these monocultural stands.

THE FOREST RENEWAL PROGRAM SHOULD ENSURE INCREASED DEVELOPMENT AND USE OF HARDWOOD SPECIES. IT SHOULD ATTEMPT TO MINIMIZE LARGE ACREAGES COMPOSED OF SINGLE SPECIES STANDS WHICH ARE MORE PRONE TO INSECT INFESTATIONS.

IV TRANSPORTATION

Roadside ditches and culverts form a vital link between upland fields and streams. Silt eroded from farm fields, together with fertilizers, pesticides and roadside salt, eventually enter water bodies where they become pollutants with a variety of harmful effects.

The practices associated with the construction and maintenance of roads, bridges, and causeways themselves can contribute heavily to accelerated erosion, by exposing bare ground surfaces to rain and run-off. These practices rank with farm erosion in contributing to the erosion problem in our water bodies.

The basic problem for roads is similar to that for agriculture - bare ground over the winter. The difference is that operations in highway construction and maintenance can be more easily scheduled to avoid problems.

Causeway construction, with constricted openings for water flow, has been linked to overenrichment of estuaries. Normal flushing action by tides is restricted, leading to a harmful build up of nutrients.

For these reasons, the Department of Transportation and Public Works is a key player in the conservation strategy. Its

practices are very important to the water quality of streams and estuaries.

BACKGROUND

Over the past decade the Department has considerably improved its practices related to erosion control. It has a major program of roadside seeding and stream crossing protection. A hydroseeder is used to stabilize bare ground with a grass cover. Stream crossings are stabilized with rock rip-rap facing. Some silt traps have been constructed. Ditch diversion through forested areas, acting as filters, has begun.

Although there is general agreement that the situation has improved, much still remains to be done.

RECOMMENDATIONS

1. Scheduling Construction and Maintenance Operations

   We believe the desirable goal to be that no ground should go uncovered into the winter. The Department should be advised by those making decisions on construction and maintenance well in advance of the construction season. If this is not possible then priorities should be established each year to enable construction and maintenance on roads most prone to erosion to be scheduled earliest in the season, so that a grass cover crop can be established.

This will require additional funding and equipment.

GOVERNMENT SHOULD ADOPT AS A GOAL THAT NO ERODIBLE SURFACE SHOULD BE LEFT UNCOVERED OVER WINTER. ANNUAL ROAD CONSTRUCTION AND MAINTENANCE SCHEDULES SHOULD BE DRAWN UP WITH THE GOAL OF MINIMIZING SOIL EROSION. SEEDING OF BARE SLOPES SHOULD BE COMPLETED BY SEPTEMBER 15 IN A NORMAL YEAR.

THE DEPARTMENT'S HYDROSEEDER IS NOW USED EXTENSIVELY. ONE MACHINE AND EXISTING STAFF IS INADEQUATE TO STABILIZE ALL SITES DURING THE OPTIMUM PERIOD FOR GRASS GROWTH. ADDITIONAL FUNDING FOR EQUIPMENT AND PERSONNEL FOR OPERATION OF HYDROSEEDERS AND MAINTENANCE OF SILT TRAPS WILL BE REQUIRED.

2. Co-ordination with Other Groups

When greater efforts to curb soil erosion and improve water quality occur, as envisaged in this strategy, a high degree of co-operation between the Department of Transportation and Public Works, the Department of Agriculture, local landowners and conservation groups will be required. The Department must give a higher priority to erosion control than is now the case.

THE DEPARTMENT MUST GIVE A HIGHER PRIORITY TO EROSION CONTROL AND CO-OPERATE FULLY WITH OTHER GOVERNMENT

DEPARTMENTS, LOCAL LANDOWNERS, AND COMMUNITY GROUPS IN THEIR EFFORTS TO CONTROL EROSION.

3. Design of Drainage Outlets

As the pattern of agricultural use changes, through an increased use of tile drainage and through conservation measures aimed at water channelling and diversion, traditional ditch and culvert designs will need re-examination. This may involve a re-examination of the traditional sixty-six foot right-of-way requirement for public roads.

THE DEPARTMENT SHOULD INVESTIGATE IMPROVED METHODS OF DRAINAGE CONSTRUCTION THAT WILL ASSIST IN EROSION CONTROL.

4. Other Remedial Measures

Given the fact that large amounts of erosion from the upland are likely to continue to occur in the near future, the Department should place strong emphasis on preventing upland silt from entering streams and waterways. These measures include: the installation and maintenance of silt traps where necessary, the closure of certain unpaved roads for temporary periods in the winter and spring when silt-laden water flows directly from road ruts into streams at the bottom of slopes, the identification and solution of problem areas on clay roads which may include gravelling roads where they cross streams, instituting training programs on erosion control for road machine operators; and

working closely with habitat enhancement crews who will be engaged in stream clean-ups.

THE DEPARTMENT MUST ATTEMPT TO ELIMINATE TO THE MAXIMUM EXTENT POSSIBLE THE FLOW OF THE PRODUCTS OF EROSION INTO STREAMS AND ESTUARIES.

5. Causeways

Improperly constructed causeways have led in the past to serious water quality problems in estuaries as a result of interference with the tidal flushing problem.

It is evident to us that the province must ensure that any crossing over Northumberland Strait be designed in such a way as to minimize adverse environmental effects.

THE DEPARTMENT SHOULD DESIGN AND MODIFY EXISTING CAUSEWAYS TO INCREASE WATER FLOW THROUGH ESTUARIES. FUTURE ESTUARY CROSSINGS SHOULD BE DESIGNED TO MAXIMIZE WATER FLOW.

V FISH AND WILDLIFE

We share this Island with a variety of wild creatures which contribute greatly to our quality of life. Hunting and fishing are traditional recreational pursuits that provide enjoyable outdoor experiences as well as food for the table. Others, who do not hunt or fish, gain enjoyment from viewing wildlife or being afield in natural, wildlife settings.

In an economic sense, wildlife contributes as much as twelve million dollars yearly to the provincial economy. It is an important element of the tourist industry. With improved habitat management, wildlife can play an even more important role in our economy in the future.

Historically, both the composition of our wildlife species and their population levels have changed dramatically since European settlement began in the eighteenth century. The axe, match and plough led to the early demise of species such as caribou, spruce grouse and fisher which required large undisturbed forests. Later, hunting and trapping led to the extinction of species such as moose, beaver, bear and river otter. Other species, such as the piping plover, are threatened with extinction today. One goal of a conservation strategy must be to prevent the needless endangering of species that share our Island home, even though they may have little apparent economic value.

The settlement process, while eliminating some species, also brought the accidental or planned introduction of new species. Some - rats and mice - were unwelcome, others - skunks, starlings, and house sparrows - brought dubious benefits, but a few - raccoons, gray partridges and pheasants - were welcome additions. Our present fauna is a mix of original and new species that have survived more by accident than with good planning and management.

Although many species of wildlife are resident year-round, other species, such as waterfowl and songbirds, are migratory, pointing out the need for co-operation with governments and agencies outside the province where these species spend a good part of their life-cycle.

PRESENT PROBLEMS

Stream degradation is the most important problem now confronting the maintenance of existing stocks of fish and wildlife in the province.

Streams, estuaries and wetlands are being contaminated by the products of soil erosion from farming and highway operations. Manure, pesticides and chemical nutrients from point and non-point sources are entering water bodies and lowering their quality. We believe this to be a major problem that can be tackled immediately, resulting in positive gains within a few

years.

A strong effort focussed upon stream rehabilitation would have three major effects. It would reverse the environmental degradation now occurring; provide the basis for major new recreational salmon and trout fisheries; and supply useful and rewarding seasonal employment for residents of the province.

A second major problem is the preservation of wildlife habitat. In this province the pace of development is slow. The result is that wildlife habitat is diminished in small amounts that become appreciable only over a long time. The casual observer scarcely notices that they are gone. We believe that now is the time to designate significant wetlands and natural areas and to work out plans for their protection and preservation.

A third problem is management of wildlife species to attain acceptable population levels. Improved habitat usually results in an increase in wildlife stocks. Additional management practices are often necessary, however, to ensure acceptable population levels. Some rare or endangered species like the piping plover may require special types of protection. Other species, such as cormorants, are at such high population levels that a multitude of complaints are heard from fish farmers, commercial fishermen and anglers.

A fourth problem is the long term management of water systems to ensure that encouraging some species does not result in negative consequences for other species. Water systems must be managed to benefit all wildlife associated with them. A poorly situated or designed impoundment can interfere with the natural migration and production of trout and salmon, as well as such commercially valuable species as smelt and gaspereau. Each river must be managed to attain a harmonious balance for the wildlife species it supports.

There are a large number of federal and provincial government agencies, national and provincial organizations, local groups and individuals concerned with the management, use and enjoyment of wildlife. We believe that working together, these groups have a major role to play in a conservation strategy. Efforts must be taken, though, to ensure that their work is co-ordinated, as demonstrated in current agreements with Environment Canada and Ducks Unlimited for the management of waterfowl and their habitats.

RECOMMENDATIONS

1. Habitat Management

   A. Conservation Centre

   As indicated in Chapter II, the downstream effects of soil degradation are detrimental to aquatic habitats. Unlike the situation on the uplands, where reducing soil

erosion is likely to be a long, slow process, we believe that much of the soil and pollutants now entering streams can be contained by stabilizing stream edges with vegetated greenbelts, by diverting ditch run-off through woodlands, as well as using a host of other known soil erosion control techniques.

Habitat enhancement for fish and wildlife is a long term commitment. It must involve various levels of government as well as community groups working in a co-ordinated manner. Funding and manpower resources are essential. Therefore, we suggest that this province should develop a centre similar to the Fish Habitat Centre now in place in New Brunswick but with broader goals to address many of the problems outlined in this report. The proposed Conservation Centre would have these goals:

(i) to identify sites that provide opportunities for environmental improvement, whether it be for fish and wildlife, landscape quality, pollution abatement or other conservation problems

(ii) to determine the methods and priorities to achieve restoration goals on specific sites.

(iii) to offer basic training sessions for current and future habitat enhancement programs

(iv) to act as a "storehouse" for information, equipment, and supplies.

(v) to develop public awareness of the need for habitat restoration

Initially work would concentrate on water systems but eventually the Conservation Centre should be participating in a variety of programs involving both the public and various government agencies.

A Conservation Centre would require a director with a broad knowledge of plants and animals and functioning of ecosystems, as well as the ability to work closely with government agencies and the public. Two full-time assistants to help identify the problems and solutions in various watersheds and to co-ordinate the rehabilitation programs would be desirable. Personnel for doing the enhancement work would be derived from:

(i) existing Canada Employment and Immigration Commission employment programs,

(ii) a diversion of some of the seasonal employees now hired by various government departments as a result of a higher priority given to conservation activities,

(iii) new job creation by the province during the summer months.

A CONSERVATION CENTRE SHOULD BE ESTABLISHED TO PROMOTE AND CO-ORDINATE HABITAT RESTORATION AND RESOURCE DEVELOPMENT INITIATIVES ON PRINCE EDWARD ISLAND. WORK TO REHABILITATE OUR WATER SYSTEMS SHOULD COMMENCE IN THE SUMMER OF 1987.

B. Demonstration Projects

Under an agreement with Wildlife Habitat Canada, a

five-year demonstration project has been established on the Montague River. With co-operation from landowners and by providing advice to community sponsored projects, effectiveness of various techniques for fish and wildlife management will be demonstrated.

Properly restored and managed sites could provide the models necessary for habitat restoration teams working in various regions of the Island under the guidance of the Conservation Centre. While money is available to provide staffing for the overall co-ordination and technical direction of the Montague River program, there is no funding for specific projects. Program delivery relies solely on the uptake of current federal-provincial funding programs and the various programs available under the Canadian Employment and Immigration Commission.

As well, a variety of smaller demonstration projects could be established to make landowners and the general public aware of the wildlife benefits of hedgerows and shelterbelts, of woodlots managed for maximum wildlife benefits, of techniques for stream bank stabilization, etc. Since most of the province is under private ownership it is apparent that efforts to enhance wildlife will succeed only with the co-operation of the owners of the land and the users of the resource.

DEMONSTRATION PROJECTS ILLUSTRATING THE BENEFIT OF VARIOUS MANAGEMENT TECHNIQUES FOR ENHANCING WILDLIFE SHOULD BE

ESTABLISHED WITH INITIAL EMPHASIS WITHIN THE MONTAGUE WATERSHED.

C. Applied Research and Monitoring

In order to increase populations and to obtain optimum sustained harvest of fish and wildlife species, basic information defining population levels and limiting factors is required.

Monitoring of population changes in response to habitat and stock improvement will enable application of techniques which are most effective on P.E.I. The current research program for establishing an early-run Atlantic salmon fishery in the Morell River is a good example.

ADEQUATE RESOURCES SHOULD BE MADE AVAILABLE TO CONDUCT THE RESEARCH AND MONITORING NECESSARY FOR WISE MANAGEMENT OF OUR FISH AND WILDLIFE RESOURCES.

D. Integrated Planning

An abundance of quality habitat is essential for good fish and wildlife populations. On P.E.I. most of our land is either under agricultural production or forest cover. Thus, to ensure a place in the future for wildlife, we must incorporate good wildlife management practices into agricultural and forestry activities.

Habitat enhancement plans should be devised with a knowledge of present and future demands of various resource

users. This will require consultation between government agencies and user groups to develop long term management plans for each watershed. Such discussion and involvement should help instill positive attitudes toward good stewardship.

INTEGRATED LONG TERM FISH AND WILDLIFE MANAGEMENT PLANS SHOULD BE DRAFTED FOR EACH OF OUR MAJOR WATERSHEDS.

2. Population Management

A. Trout and Salmon Enhancement

We believe that by increasing stocks of salmon and sea run trout in Island streams and estuaries an opportunity will be provided to develop recreational fisheries of significant economic value to the province. Historical records show much higher population levels than are now the case. To approach these historic levels will require not only a major effort in habitat restoration, but also the propagation and stocking of selected strains of trout and salmon. An early run salmon fishery, as now being developed on the Morell River, can provide improved angling for Islanders and a new recreational fishery to attract tourists.

Over the past three years, research being conducted on P.E.I. by federal Fisheries and Oceans personnel with help from the province and public has shown that modern semi-natural rearing techniques facilitate the production

of high quality salmon smolts which show much better survival at sea and higher return rates. Using these techniques, large numbers of Atlantic salmon can be expected to return to Island waters, thus providing a sound basis for expansion of recreational fishing. In addition, because of our large number of bays and estuaries, the re-establishment and development of a sea-run trout fishery will generate much interest and participation by Island anglers while stimulating tourism. We have also been informed that a much expanded and promoted inshore recreational fishery for such species as cod and mackerel has considerable potential in helping to extend the tourist season.

THE FEDERAL AND PROVINCIAL GOVERNMENTS SHOULD ENTER INTO AN INLAND SPORTS FISHERIES AGREEMENT TO SUPPORT ENHANCEMENT PROGRAMS FOR TROUT AND SALMON, INCLUDING THE EXPANSION OF THE CURRENT ATLANTIC SALMON ENHANCEMENT PROGRAM, THE DEVELOPMENT AND ENHANCEMENT OF SEA-RUN BROOK TROUT FISHERIES, AND THE ADOPTION OF A TROUT STOCKING POLICY.

THE FIRST OF SEVERAL SEMI-NATURAL PONDS SHOULD BE BUILT IN 1987 AND EFFORTS SHOULD BE MADE TO ENSURE THAT ADEQUATE MANPOWER AND RESOURCES ARE AVAILABLE TO OPERATE THE CARDIGAN FISH CULTURE STATION AT ITS FULL POTENTIAL.

B. Waterfowl Management

A North American Waterfowl Management Plan has been agreed to by the governments of Canada and the United States. It provides an international framework for the conservation of waterfowl over the next fifteen years. A plan specific to this province is being prepared, outlining population goals, research and survey requirements, and habitat needs.

THE P.E.I. WATERFOWL MANAGEMENT PLAN SHOULD BE ADOPTED AND IMPLEMENTED.

C. Management of Wildlife Species

The management of species is somewhat of a balancing act. On the one hand, we have a segment of the population that actively partakes in the harvest of fish and wildlife and supports their active management, while on the other hand, people adamantly defend the rights of wildlife to exist free of human interference. This latter concept may be admirable in theory, but people have so profoundly affected every habitat in this province that we now must manage wildlife populations or risk the extermination of some species and the expansion of others to intolerable levels. Many people who are non-consumptive users of wildlife fail to realize that often the worst problems of environmental disturbance and population declines are caused by such use. For example, in the P.E.I. National

Park declines in tern and piping plover populations do not result from hunting, but from visitors disturbing nesting sites.

Certain species, like the double-crested cormorant, may occasionally attain such high population levels that individuals within the population interfere with man by competing with anglers for trout, and causing economic losses to commercial fishermen. Where this is the case, actions to reduce populations to acceptable levels should occur. We believe it better to have a properly managed public program of population control, rather than control by the haphazard efforts of individuals, as is the present case.

WILDLIFE SPECIES SHOULD BE MANAGED TO ENSURE ACCEPTABLE POPULATION LEVELS.

3. Habitat Protection

A. Fish Habitat

Fish habitat requires protection from many land and water uses which may have detrimental impacts. Inappropriate construction, effluent discharges, water withdrawals, physical disturbances, environmental contaminants and even the introduction of exotic species may cause deterioration of fish populations. Although some control is exercised through the application of the Fisheries Act, experience has demonstrated its weakness in

controlling alterations such as the infilling of wetlands and estuaries.

Recently, the federal Department of Fisheries and Oceans announced the adoption of a new policy for fish habitat management. Its major objective is net gain of productive capacity for fisheries resources. Goals are to conserve, restore, and develop fish habitat. This policy should integrate smoothly with our previously identified proposals for enhancement of fish habitat.

THE P.E.I. ENVIRONMENTAL PROTECTION ACT SHOULD BE REVISED TO INCLUDE:

(i) THE NECESSITY OF A PERMIT FOR THE ALTERATION OF A STREAM OR WATER BODY

(ii) WATER QUALITY STANDARDS FOR THE DISCHARGE OF EFFLUENTS INTO A WATER BODY.

FISHERIES AND OCEANS' FISH HABITAT MANAGEMENT POLICY SHOULD BE OFFICIALLY ENDORSED AND APPLIED TO THE FUTURE MANAGEMENT OF THE PROVINCE'S INLAND WATER SYSTEMS.

B. Wetlands

We have an abundance of rich and diverse wetlands, fresh water and marine. They are the habitats for a variety of wildlife including waterfowl, aquatic fur-bearers, sport fish and many non-game wildlife. As yet wetlands have not come under severe developmental pressure.

We should ensure that they remain as much as possible in their natural state. A shorefront subdivision policy prepared by the Land Use Commission, proposing development restrictions on wetlands, ecological areas and fragile lands, supplements the recommendations made here.

A POLICY FOR THE CONTINUED NATURAL FUNCTIONING OF WETLANDS SHOULD BE DEVELOPED, INCLUDING A FEDERAL-PROVINCIAL AGREEMENT FOR THE DESIGNATION OF SITES. THE PLANNING ACT REGULATIONS SHOULD BE AMENDED TO PROTECT WETLANDS.

Wetlands of significant importance should be identified, and those of international importance to migratory birds considered for designation under the RAMSAR Convention. This convention initiated a process to designate wetland sites of international significance throughout the world. Malpeque Bay is recognized as a candidate RAMSAR site because of its importance to waterfowl, and in particular Canada geese, during spring and fall migrations. Discussion should be begun with local communities to consider the designation of Malpeque Bay as a RAMSAR site.

C. Ecological Reserves

Ecological reserves, sometimes referred to as "natural areas", "environmentally significant areas" or "environmentally sensitive areas", are legally protected natural or

relatively undisturbed areas. Sites are reserved for the purposes of preservation, research and education. They are to preserve samples of habitats which are typical, rare or unique. These areas represent a moral obligation on our part to try to maintain the natural diversity of the earth's living organisms.

In this province approximately 50 sites of significance have been identified over the last 15 years, although some have since been destroyed. The province has acquired ownership or partial ownership of about 40% of the 36 sites identified as being significant in the most recent survey (1982).

Although, in the past, the provincial government has clearly identified the Department of Tourism and Parks as the agency responsible for the sites, recent management has been unsatisfactory. Three government departments and a non-governmental agency (Forestry, Tourism and Parks, Community and Cultural Affairs and the Island Nature Trust) currently manage environmentally significant areas, with no co-ordinated approach to protection and management.

THE GOVERNMENT SHOULD MAKE A COMMITMENT TO PROTECT ENVIRONMENTALLY SIGNIFICANT SITES IN THIS PROVINCE. THIS MUST INCLUDE THE IDENTIFICATION OF MANPOWER AND FINANCIAL RESOURCES TO ADEQUATELY MANAGE THESE SITES.

THE GOVERNMENT SHOULD CONSOLIDATE SITES WHICH IT MANAGES

UNDER ONE AGENCY TO ENSURE CO-ORDINATED AND EFFECTIVE MANAGEMENT.

AN ECOLOGICAL RESERVES ACT SHOULD BE DEVELOPED FOR THIS PROVINCE TO PROVIDE THE NEEDED PROTECTION FOR ENVIRONMENTALLY SIGNIFICANT AREAS.

VI COASTAL ZONE

Some of our most valuable natural resources are estuaries and the lands that surround them. Created by rising sea-levels after the glaciers retreated 12,000 yars ago, these flooded river valleys are home to a variety of fish and shellfish species. Some, such as Malpeque oysters, have been known as gourmet delicacies for generations; others, such as the cultured blue mussel, are only now attaining fame across the continent.

With proper management and protection we believe that the estuaries can support an expanded aquaculture and shellfish industry, develop a significant recreational fishery and continue to meet the needs of recreational boating and other aspects of the tourist industry.

CURRENT PROBLEMS

The estuaries, the lower salt water or brackish reaches of our fresh water streams, are threatened by the same processes of soil erosion that have been identified in previous chapters of this report. The products of accelerated soil erosion from the uplands are transported by streams or wash in from adjacent land surfaces, creating a siltation problem in the estuaries. The results include the burying of shellfish beds in estuaries and reductions in water depth for aquaculture and navigation.

The shallow and slow moving nature of the water in estuaries makes them highly susceptible to damage from pollution. Fertilizers and manure originating from agricultural land, treated and untreated sewage, causeways and poorly designed bridges can all cause a build-up of nutrients which results in overenrichment, oxygen depletion and, on occasion, death of many life forms in the water. In the summer of 1984, several estuaries, including the West River, had extensive mortality of fish, shellfish and other aquatic organisms.

The health of the estuaries can be maintained only with a marked reduction in the silt and pollution from point and non-point sources that are now flowing into them. In the long term, this will occur only as the users of land upstream adopt proper soil conserving practices and waste management disposal practices. In the short term a concentration upon the stream and estuary edges, as outlined in the previous chapter, will improve the situation.

A second major requirement in the estuaries is that the resources must be managed and used in a way that guarantees sustainable development. At a time of quickening interest in the products that can be derived from estuaries, it is essential that we know their carrying capacity, the maximum harvest that can be allowed and determine ways of resolving conflicts as they emerge.

RECOMMENDATIONS

1. Providing for Sustainable Use

Controlling siltation and the overenrichment derived from non-point sources of pollution are the two major problems threatening the sustained productivity of waters in the coastal zone. Measures that will reduce the transportation of soil and associated nutrients from upland surfaces into the estuaries are essential. Overenrichment can also be combatted through improved farm practices for the storage and handling of manure, the better design and retrofitting of feedlots near water courses, and other measures that will reduce point and non-point sources of bacterial contamination that render large tracts of estuarine habitat unfit for the direct harvest of shellfish.

GOVERNMENT SHOULD DEVELOP REMEDIAL PROGRAMS TO REDUCE SILTATION AND OVERENRICHMENT FROM POINT AND NON-POINT SOURCES IN ESTUARIES.

2. Avoiding Conflicts Among Users

Potential for conflict within estuarine waters abound. There are many users, ranging from commercial fishermen through developers of new types of aquaculture to recreational boaters, all using the same water bodies. We believe it is essential that a process be devised for the orderly apportionment of these waters and that a forum be

provided for users to resolve their conflicts as well as to make their views known about problems occurring within the coastal zone.

A. Designation of Large Water Bodies

The Department of Fisheries and Oceans is now developing a designation process for the estuaries and bays under their jurisdiction. As we understand it, this is a system similar to land use zoning, which allocates portions of the estuary to various users. Provided there is full consultation with all user groups, we believe this process should lead to orderly development within the coastal zone.

THE DESIGNATION PROCESS DEVISED BY THE DEPARTMENT OF FISHERIES AND OCEANS SHOULD BE SUPPORTED, WITH THE UNDERSTANDING THAT ALL USER GROUPS WILL BE FULLY CONSULTED BEFORE IT IS PUT INTO PLACE.

B. Water Resources Advisory Council

We believe there is a need for an organization of the users of coastal and inland surface waters to provide advice to government on proposals for shoreline development and modification, to make suggestions on co-ordinated resource use and to mediate disputes among resource users to the maximum extent possible. The Council would be broadly based and would include all groups who have an interest in the use of estuarine and stream waters,

including adjacent landowners whose use of the land affects water.

A WATER RESOURCES ADVISORY COUNCIL SHOULD BE ESTABLISHED TO ADVISE GOVERNMENT ON CO-ORDINATED RESOURCE USE AND ENSURE THAT USER GROUPS HAVE ADEQUATE INPUT INTO THE DECISION-MAKING PROCESS.

3. Providing for Research and Monitoring

It is apparent that in the future our major water bodies will be used much more intensively than they have in the past. This highlights the need for applied research into management and cultural practices for the improvement of the quality and quantity of fish and shellfish production. Often research and monitoring tend to be neglected in times of fiscal restraint. In the case of our estuaries, failure to carry out the research needed could be detrimental to continuing use and future development.

APPLIED RESEARCH AND MONITORING DIRECTED AT SUSTAINABLE DEVELOPMENT OF RESOURCES IN ESTUARIES IS ESSENTIAL. THESE ACTIVITIES SHOULD INCLUDE: MONITORING RATES OF SEDIMENTATION, WATER QUALITY, STOCKS AND HABITATS OF FISH AND SHELLFISH AND CARRYING OUT RESEARCH IN GROWTH RATES, GENETICS, DISEASE AND COMPETITION PROBLEMS IN FISH AND SHELLFISH POPULATIONS.

4. Developing Recreational Resources

In addition to the traditional fishing uses of estuarine water and the new demands posed by commercial aquaculture, we believe that accomodation must be made for a variety of recreational uses that can and will be developed in future decades. The sheltered waters of estuaries, bays and rivers offer scope for sailing, ice boating, ice fishing, wind surfing, water skiing and a variety of other tourist type activities that can, in many cases, be used to extend the tourist season. In addition, the potential for a recreational salmon and trout fishery outlined in the previous chapter should be extended to estuarine waters. As these activities emerge, it will be essential that they be developed within a framework of co-operation among interested parties.

RECREATIONAL OPPORTUNITIES SHOULD BE ENCOURAGED WITHIN THE COASTAL ZONE AS ONE ELEMENT WITHIN A CO-ORDINATED FRAMEWORK TO BE DEVELOPED IN CONSULTATION WITH A PROPOSED WATER RESOURCES ADVISORY COUNCIL.

5. Regulating Sand Mining

In addition to resource harvesting, one major mining activity occurs within the coastal zone. Sand mining, for the production of concrete, is an activity that has generated much controversy over the years. After reviewing a number of studies carried out by competent consultants we

conclude that, in a number of clearly identified places around the coastline, sand mining can be carried on indefinitely at present levels, given the size of offshore stocks of sand. The difficulty lies not in the depletion of the resource but in the manner in which the extraction is carried out. In some cases undue conflict occurs between truckers and local residents; in other cases nesting bird species are unnecessarily disturbed.

SAND MINING IS A LEGITIMATE ACTIVITY IN AREAS THAT HAVE BEEN CLEARLY IDENTIFIED FOR EXTRACTION WITHOUT ADVERSE HARM TO EXISTING BEACHES. SPECIAL ATTENTION SHOULD BE PAID TO THE MANNER IN WHICH THE SAND IS EXTRACTED, TO RESOLVE CONFLICTS BETWEEN EXTRACTORS, LOCAL RESIDENTS AND COLONIAL NESTING SPECIES.

6. Controlling Coastal Erosion

Shoreline recession due to the erosional forces of wind, waves and tides is a serious problem in this province, not only on the outer, exposed coast line but also in most rivers and exposed coastal embayments. The average annual rate of erosion along the North Shore is approximately two and one-half feet each year.

In many places little can be done to control the natural forces of erosion. In other places, however, control measures are appropriate and need not necessarily be

elaborate or expensive to achieve the desired results. The role of government should be to provide shoreline property owners with information on erosion problems and methods for alleviating them.

A HANDBOOK FOR THE USE OF PROPERTY OWNERS SHOULD BE DEVELOPED. IT SHOULD CONTAIN INFORMATION ON THE CAUSES AND CONTROL OF SHORELINE EROSION.

VII LANDSCAPE, LAND USE PLANNING AND TOURISM

The landscape of Prince Edward Island defines the personality of the province. The patchwork quilt of field, forest, sand, water, hamlets and ports has been a source of inspiration to its writers, poets and artists, as well as enriching the everyday life of all Islanders. Landscape, like the renewable resources we have considered in previous chapters, is a sustainable resource that must be viewed as a whole if it is to retain its integrity.

In an economic context, it provides the basis of tourism, the province's second largest industry. In our view, this is an industry based upon renewable resources that can be expanded considerably without undue stress upon the environment.

Landscape is not static. It changes imperceptibly as a consequence of myriads of decisions made over time by landowners, businesses and governments. Within the past quarter century the Island landscape has been changed drastically by the enlargement of farms and fields, the increasing emphasis upon row crops, the reversion of former cropped land to white spruce, urban sprawl and strip development along most paved roads. While this report deals primarily with the rural environment, we recognize that conservation of the urban environment is also essential.

LAND USE PLANNING

The land use planning system in the province needs to be strengthened. At the provincial level we are failing to address serious problems that are occurring gradually within commuting distance of urban centers.

In a report in 1974 the Land Use Commission identified strip development as a serious problem. It continues unabated today, with all but major roads allowed to be stripped. The problem is now so far advanced that right-to-farm legislation is advocated by the farming community.

Unserviced subdivisions continue to be approved in rural areas while serviced land remains idle within municipalities. Single lots and subdivisions are approved on prime agricultural land, resulting in a needless waste of our agricultural land base.

Premature subdivision is common in shorefront areas, with lots approved many years before development occurs. Ecological reserves, wetlands, dunes and other fragile lands receive little protection under current regulations.

The land use planning process in municipalities is still in its infancy, although 37 of the province's 88 municipalities now have completed or are in the process of completing Official

Plans. Often there is too little consideration of the environment in these plans, nor, in the case of many smaller municipalities, is there a capability to interpret and enforce the plans and their accompanying by-laws.

RECOMMENDATIONS

1. Improving the Land Use Planning Process

A. Environmental Considerations

A greater environmental input should be directed into the planning system. Land use planning is now seen as the domain of the professional planners and development control officers. Much more involvement is needed from agriculturalists, groundwater specialists, biologists, foresters, and other resource specialists.

ENVIRONMENTAL CONSIDERATIONS SHOULD PLAY A GREATER ROLE IN THE LAND USE PLANNING PROCESS. ALL RESOURCE-RELATED DEPARTMENTS OF GOVERNMENT SHOULD BE CONSULTED AND INVOLVED IN THE DEVELOPMENT OF LAND USE POLICIES.

B. Areas under Provincial Jurisdiction

The province needs to play a stronger role in planning in those large rural parts of the province not incorporated as municipalities. We believe that the present Planning Act regulations, which do not distinguish between suburban fringe type areas and areas far removed from urban centres,

are inadequate. They should address more clearly the question of minimum lot sizes as related to soil types, and place greater emphasis on the preservation of prime agricultural land, the control of strip development, and premature subdivision in coastal areas. The recent policy paper on shorefront subdivisions prepared by the Land Use Commission is an example of an excellent approach to these problems.

A more innovative approach should be taken to the use of mechanisms within the existing regulations now seldom used, such as Special Planning Areas and Conservation Zones. Many more waterways in addition to the Morell River would be prime candidates for protection, for instance, under a revamped Conservation Zone approach. Means must be worked out to protect special places, such as the ecological reserves mentioned in a previous chapter, sand dunes and even scenic views. A variety of techniques such as scenic or conservation easements should be explored as possible means of protection. An Archaeology Act is necessary to ensure that a sufficient period for site evaluation and excavation would ensue before an archaeological site could be approved for development.

THE PLANNING ACT AND ITS REGULATIONS SHOULD BE REVIEWED TO ADDRESS CONSERVATION ISSUES IN THE DEVELOPMENT PROCESS. THE REVIEW SHOULD INCLUDE MAJOR LAND USE ISSUES AS WELL AS INNOVATIVE APPROACHES TO THE CONTROL OF DEVELOPMENT IN

AREAS OF PROVINCIAL SIGNIFICANCE. THE REVIEW SHOULD INCLUDE A STRONG COMMITMENT TO MONITORING AND ENFORCEMENT.

C. Provincial Guidelines for Official Plans

Strong provincial guidelines, incorporating an environmental dimension, are needed for the guidance of municipalities developing Official Plans. These would include a recognition of soil types in defining minimum lot sizes, greater emphasis on preservation of agricultural land, the control of strip development, etc. Provision must also be made for the continuing education of administrators and elected officials who are charged with the implementation of Plans.

THE OFFICIAL PLAN APPROVAL PROCESS REQUIRES PROVINCIAL STANDARDS THAT MUST BE MET BEFORE A PLAN CAN BE APPROVED.

D. Policy Statements

We believe there is a need for greater public awareness of planning issues, to allow for the debate necessary to define acceptable provincial objectives for land use policies. In other provinces, notably Nova Scotia and Ontario, policy statements are circulated for public scrutiny and comment before adoption. This guarantees a thorough airing of issues before regulations are enacted. A similar approach in this province would have merit.

CLEAR POLICY STATEMENTS SHOULD BE PROVIDED FOR PUBLIC SCRUTINY BEFORE ENACTMENT. THE POLICY STATEMENT APPROACH USED IN OTHER PROVINCES SHOULD BE ADAPTED TO ISLAND NEEDS.

E. Reducing Visual Pollution

Visual pollution of the landscape derives from a variety of sources - billboards, abandoned vehicles, litter and other debris of a "use and discard" society. Constant vigilance is necessary to prevent the degradation of landscape resources.

We strongly support present programs that keep rural areas of the province free from billboards and discarded auto bodies. The present signage program is a model of its type and should not be weakened.

The litter problem continues, especially with the recent proliferation of fast food outlets in major centers. The initiative of the Women's Institutes in sponsoring annual clean-ups should continue to be supported. In addition, roadside disposal sites should be developed with garbage cans, litter bags and information. These could be located at scenic lookout sites or picnic sites. Regular maintenance would be essential.

GOVERNMENT SHOULD CONTINUE TO SUPPORT MEASURES THAT WOULD REDUCE VISUAL POLLUTION OF THE LANDSCAPE.

TOURISM

Conventional centres such as Cavendish, Charlottetown, Brudenell and Mill River will remain as the backbone of the province's tourist industry. We are convinced that many leisure time activities now neglected could form the basis of an addition to the present tourist trade, which would extend tourism into the shoulder seasons and enhance the outdoor experience of both tourists and residents. These activities include hiking, bicycling, cross-country skiing, bird watching, photography and enjoyment of landscape. They could be used to attract new types of tourists to the province and attract existing tourists to parts of the Island now little frequented. We believe there is a large and growing market in metropolitan areas consisting of those who wish to escape the hurly-burly of city life for a period of rest and renewal in a peaceful countryside.

RECOMMENDATIONS

1. Developing Rustic Roads

   The rustic roads proposal, developed by the Island Nature Trust, is worthy of strong support. Designation, development and maintenance of a system of rustic roads would serve as a beginning of a trail system to serve as sites for hiking, walking and nature study.

   A SYSTEM OF RUSTIC ROADS SHOULD BE DEVELOPED.

2. Developing Trail Systems

In Europe and other parts of North America, the use of trails for hiking, cross country skiing, bicycling and horseback riding is a rapidly growing phenomenon. In this province such trails would benefit visitors and residents alike.

We suggest that two of the components of a trail network are already at hand, in the form of rustic roads and abandoned railway rights-of-way. Links between the two could be furnished over private land with the agreement of landowners. Experience has shown that these trails are most successful when they are circular or elliptical in form, so that the user does not have to retrace his route in returning to the starting point.

Provincial parks would be natural starting points for these trail networks. We suggest as a pilot project that one of these trail networks be developed in the summer of 1987.

TRAIL SYSTEMS SHOULD BE DEVELOPED AT SEVERAL LOCATIONS THROUGHOUT THE PROVINCE. RESTORATION OF THE BONSHAW TRAIL SHOULD BE UNDERTAKEN DURING THE SUMMER OF 1987.

3. Developing Scenic Lookouts and Observation Towers

Scenic views abound within the rolling topography of the Island. In too many places there is inadequate room to

stop and enjoy them. It is unfortunate that the only scenic lookout in the province, at Strathgartney, may now be lost to public use. Provision of scenic lookouts, together with observation towers at key wildlife sites, such as East Point and Indian River, would enhance landscape enjoyment and provide useful employment to those constructing them.

SCENIC LOOKOUTS AND OBSERVATION TOWERS AT WILDLIFE SITES SHOULD BE CONSTRUCTED AT KEY LOCATIONS THROUGHOUT THE PROVINCE.

VIII WATER MANAGEMENT AND POLLUTION CONTROL

Because our province is not heavily industrialized, we do not suffer from the major pollution problems of the more densely settled parts of the country. This does not mean that pollution is not a problem.

Many wells suffer from bacterial contamination every year; water levels in some areas are chronically high in nitrates; underground fuel storage tanks do leak. In comparison to other places we may be fortunate, but we have no grounds for complacency.

The key to maintaining a pollution-free environment is preventive maintenance. Most pollution issues and concerns facing the province today can be traced back to a lack of preventive maintenance on site-specific problems. If sufficient attention is paid at an early stage to potential sources of water quality degradation, negotiation of resource use conflicts and the pre-planning of the impact of municipal and industrial developments, then we can maintain a clean environment.

PRESENT PROBLEMS

The most serious effects of pollution are upon our water supplies. The threat to surface water bodies posed by siltation and associated effects has been treated in previous chapters. In

this chapter we concentrate on groundwater.

We are almost entirely dependent on groundwater for our water supply in this province. Only a relatively small amount of surface water is used, chiefly for livestock watering and industrial cooling systems.

The remainder, about 90 percent, comes from bedrock wells which are generally very productive. Only in the Charlottetown area have questions been raised about possible shortages in supply. Well water is drawn from highly-fractured sedimentary rocks which form the water-bearing geological units or aquifers. These aquifers underlie glacial materials and soil which are, for the most part, highly permeable.

The result is a groundwater system that is highly susceptible to contamination from man-made sources on the land surface. Leakage from underground storage tanks, road salt and sand storage piles, faulty sewer and lagoon systems, fertilizers, pesticides and manure from agricultural operations - all are capable of infiltrating to the water table and contaminating wells. Any hole that is drilled into the ground constitutes a possible source of contamination to the groundwater supply.

The solution is constant vigilance. Water supplies must be monitored, sources of pollution identified and removed. Industrial and municipal water supply development proposals must

be reviewed at an early stage. Too often groundwater, because it is out of sight, is also out of mind.

RECOMMENDATIONS

1. Preventing Groundwater Contamination

Adequate supplies of pure groundwater are essential to our continuing development within this province. We have an adequate supply; we must protect it to maintain long term sustainable development.

A. Protection of Groundwater Quality

Specific point sources for groundwater contamination include underground storage tanks for petroleum products, salt and sand storage piles for highway use, and garbage dumps. We welcome recent legislation to ensure the proper installation and upgrading of fuel storage tanks and urge continued strict enforcement and monitoring. Permanent road sand-and-salt piles and mixing sites should be located in locations where groundwater and wells will not be affected. The number of community refuse dumps should be reduced to half their present number.

Subtle changes in groundwater quality may occur due to fallout from atmospheric pollutants, pesticide residues, agricultural fertilizers or urban contaminants. Extremely small concentrations of some of these can create health concerns. Thus, longterm groundwater monitoring programs must be in place to assess municipal and rural water

quality. Such assessment programs can identify potential problems at an early stage. Where municipalities depend on private wells for water supply, as opposed to central systems, the risks to drinking water quality are often high. Resource evaluations must be carried out in such areas and potential pollution sources identified. Sources of future water supply should be identified and protected.

SOUND PLANNING AND MANAGEMENT IS REQUIRED TO MINIMIZE THE EFFECTS OF POINT SOURCE CONTAMINATION. THE PUBLIC MUST BE ASSURED OF THE LONG TERM VIABILITY OF OUR GROUNDWATER QUALITY THROUGH APPROPRIATE MONITORING PROGRAMS.

B. Well Construction Techniques

Drilled wells will remain our primary source of water for the foreseeable future. Many bacterial contamination problems could be resolved if construction and maintenance standards were improved, especially in areas where wells are closely spaced, such as subdivisions. New techniques, such as the use of bentonite clay as a mandatory sealer of well casings, should be tested on a pilot project basis.

THE PROVINCIAL WELL DRILLER'S ACT SHOULD BE AMENDED TO REFLECT CURRENT AND FUTURE NEEDS. APPROPRIATE ENFORCEMENT CAPACITY SHOULD BE PROVIDED.

C. Water and Sewage Systems

In only a few places in the province is untreated sewage allowed to flow into water bodies. Most larger urban centres have piped sewage facilities. Many of these systems are aging and will in the near future need renovation and repair. The federal government has stated that it will not be making grants available for municipal water and sewage treatment.

EFFORTS SHOULD BE INCREASED TO ENSURE THAT NO UNTREATED SEWAGE FLOWS DIRECTLY INTO WATER BODIES.
THE PROBLEM OF AGING WATER AND SEWAGE SYSTEMS SHOULD BE ADDRESSED AS A MATTER OF URGENCY.

D. Agricultural Contamination

Agricultural practices have resulted in the contamination of both groundwater and surface waters. Problems with surface water contamination have been listed in previous sections. Liquid manure lagoons have been serious point sources for well contamination. Chemical fertilizers, particularly nitrates, can move quickly from the soil into groundwater and are responsible for degrading groundwater quality in many parts of the province. Insecticides, herbicides and fungicides are often capable of rapid movement once in the soil.

The Pesticides Advisory Committee is the chief instrument in the administration of the Pesticides Control

Act, which provides for the sale, storage, use and application of pesticides and for the licensing of pesticide applicators. With the large amount of sale and use of pesticides in the province there is a need for at least one additional inspector.

In the long term, research now being carried out in integrated pest management systems may be the best way of achieving reduced pesticide use. In the short run, public awareness campaigns to alert users of the hazards involved in the use, handling and storage of pesticides are likely to achieve the greatest pay-off.

THE DEPARTMENT OF AGRICULTURE, IN CONJUNCTION WITH THE DEPARTMENT OF COMMUNITY AND CULTURAL AFFAIRS, SHOULD REVIEW THE PROBLEM OF AGRICULTURAL CONTAMINATION OF WATER SUPPLIES.

2. Disposing Of Hazardous Wastes

The amounts of hazardous wastes produced in this province are small, due to our limited industrial base. Waste products, however, such as PCBs, waste from dry-cleaning establishments, and unused pesticides and solvents which cannot be disposed of by conventional means, must be properly managed. Because many industrial establishments are small, there is often a lack of knowledge and awareness on the part of users of hazardous wastes of what they are using and how to dispose of it.

Although the volume of hazardous wastes disposed of in this province is not sufficient to justify a central treatment and disposal system, a central facility should be provided for the storage of these wastes until they can be transported elsewhere for disposal.

A SYSTEM FOR THE COLLECTION, STORAGE AND ULTIMATE OUT-OF-PROVINCE TRANSFER OF HAZARDOUS WASTES SHOULD BE DEVELOPED. INDUSTRIAL USERS OR PRODUCERS OF HAZARDOUS WASTES SHOULD BE MADE AWARE OF THE RISKS POSED BY EXPOSURE TO THESE SUBSTANCES, AND THE DAMAGING EFFECTS UPON THE ENVIRONMENT OF IMPROPER DISPOSAL.

3. Improving Air Quality

A. Long Range Transport of Air Pollutants

The chief threat to the quality of air within the province comes from the long range transport of air pollutants, part of which is commonly referred to as "acid rain". It is produced to the south and west of us; we have no control over its production. There is some evidence to suggest that acid rain may be influencing forest growth rates and does affect water quality in our natural lakes. We will feel its effects more strongly in the future unless amounts are reduced.

THE PROVINCE SHOULD STRONGLY SUPPORT THE EFFORTS OF THE FEDERAL GOVERNMENT TO REDUCE AMOUNTS OF AIR POLLUTANTS IN

THE ATMOSPHERE.

B. Local Emissions

Asphalt plants are the chief sources of air pollutants within the province. Although air quality guidelines do exist for these plants, the province lacks any effective means of monitoring them or carrying out enforcement.

AIR QUALITY STANDARDS FOR ASPHALT PLANTS AND OTHER INDUSTRIES WHICH EMIT POLLUTANTS SHOULD BE ENFORCED.

4. Environmental Assessment and Review

In some other provinces and at the federal level there are a variety of procedures used to assess the environmental impact of any major development proposal before it is approved. Some of these processes are very complex, involving public hearings and intervenor funding. We do not believe that these complex procedures are necessary within this province. At the present time, appeals to the Land Use Commission constitute an appropriate public review mechanism for major developments.

There is a need, though, for a better review process within government. New subdivisions, industries and other developments should be scrutinized for their possible impacts with respect to water demand, ground water quality and treatment of wastes. If this is done early in the

approval process, costly remedial action can be avoided at a later date.

A FORMAL ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS SHOULD BE ADOPTED WITHIN GOVERNMENT TO ENSURE THAT AN ENVIRONMENTAL REVIEW IS GIVEN TO EACH MAJOR DEVELOPMENT PROGRAM AND PROPOSAL. THIS REVIEW MUST BE APPLIED TO DEVELOPMENTS IN MUNICIPALITIES HAVING OFFICIAL PLANS AS WELL AS TO DEVELOPMENTS IN RURAL AREAS.

IX ENVIRONMENTAL EDUCATION AND PUBLIC AWARENESS

A. Environmental Education

Over the long term our best hope for achieving a lasting conservation strategy lies in the education of our young people. Only if there is a public that understands environmental issues and is prepared to demand better resource planning and management will governments have the support needed to implement them.

All five working groups were emphatic that most students now coming out of our school system do not have a solid grasp of resource issues. They have little understanding of the soil as a natural body, of groundwater issues, of the dynamics of wildlife populations or of most other natural processes.

Nor do they have any clear understanding of the economic or social aspects of resource use - the role of resource industries within the Island or Canadian economies, the relationship between cheap potatoes and silted estuaries, the relationship between the cost of food and the use of pesticides, or the trade-offs between pure air and the price of electricity.

There is already much sound material of an environmental nature in the school curricula. For reasons not clear to us, students exposed to this material still do not emerge from the school system with much understanding of the fundamentals.

What is needed is to create a greater environmental awareness and understanding within our school system. We are not suggesting environmental brainwashing; we are suggesting that a sound knowledge of natural processes is essential for rational discussion about environmental issues.

There are many ways in which the school system could be modified. There are many environmental programs of merit, such as Project Wild, that could be plugged into the system. At a time, though, when interest groups of all sorts are attempting to place a variety of pre-planned materials into the system, we do not believe that this is the route to follow. An educational system should be more than a series of plugged-in parts.

As a province where resource industries are still the basis of the economy and in a province where all of us live in small urban centres or the countryside, we believe it important to have a system of integrated resource education that is second to none. This can come about only if we pause and take a critical look at our existing system, then work towards achieving a better one.

RECOMMENDATION

WE STRONGLY RECOMMEND THAT THE PROVINCE DEVELOP AN INTEGRATED, SCIENCE-BASED PROGRAM OF ENVIRONMENTAL AND RESOURCE EDUCATION APPROPRIATE TO PRINCE EDWARD ISLAND. WE BELIEVE THAT THE PRESENT PROGRAMS SHOULD BE EVALUATED BY AN INDEPENDENT AGENCY (SUCH AS

THE INSTITUTE OF ISLAND STUDIES), THAT CURRICULUM, SCHEDULING, TEACHER TRAINING AND ALL OTHER FACETS SHOULD BE RECONSIDERED WITH THE OBJECTIVE OF ENSURING THAT ALL STUDENTS ARE PROVIDED WITH A SOUND EDUCATION IN NATURAL RESOURCES.

B. Public Awareness

Each of our five working groups emphasized that the public must become more aware of resource problems. Each recommended public awareness programs in a wide variety of areas, ranging from programs that would effectively inform tourists and residents of restrictions affecting shellfish harvesting to those that would draw greater attention to the hazards of indiscriminate pesticide use.

It is true that the public needs to be better informed on environmental issues. It is also true that all of us are bombarded daily with messages contained in newspaper and television advertisements, letters soliciting donations for a variety of worthy causes, etc. The dangers of information overload are real. Nor is it readily apparent what makes for effective public awareness campaigns. For these reasons we have resisted the temptation to simply list a large number of areas that should be targeted for public awareness programs.

We recognize the need for public education; we are not sure how it is best accomplished. Given the nature of modern media,

government would be well advised to seek professional advice on the most effective way of promoting public awareness.

RECOMMENDATIONS

1. Providing a Conservation Strategy Report and Videotape

This report has been drafted for Executive Council. We believe that a similar report should be prepared for public circulation both to heighten public awareness of the conservation strategy and to determine the public reaction to it. The public report would contain more explanatory material, photographs and graphic displays.

To supplement the report a professionally made videotape that highlights the concept of sustainable development, current environmental problems and possible solutions would be of value in promoting the conservation strategy among community and volunteer groups and in schools.

A REPORT AND VIDEOTAPE ON THE CONSERVATION STRATEGY SHOULD BE PRODUCED AND MADE AVAILABLE FOR PUBLIC USE.

2. Providing Conservation Awards

A system of conservation awards, given annually during Environment Week, would provide recognition for individual or group efforts in conservation as well as informing the public about continuing efforts in the field. The

Environmental Awards program of the Nova Scotia Environmental Control Council could serve as an example. Awards, consisting of wooden plaques, are given annually in seven categories to recipients who are selected through a process of public nomination.

A SYSTEM OF CONSERVATION AWARDS SHOULD BE DEVELOPED TO PROVIDE RECOGNITION TO THOSE WHO HAVE MADE NOTEWORTHY CONTRIBUTIONS AND TO HEIGHTEN AWARENESS OF CONSERVATION ACTIVITIES.

3. Providing a Conservation Newsletter

The P.E.I. Environeer served the useful purpose of informing the public of environmental activities before it was discontinued for budgetary reasons. The Cornerpost now plays the same role within the agricultural community. We believe that a similar newsletter, covering the types of activities considered within the conservation strategy, would be of value. Published regularly, it could be distributed to volunteer groups, schools and individuals who wish to be informed on conservation matters.

A CONSERVATION NEWSLETTER SHOULD BE PUBLISHED ON A REGULAR BASIS.

4. Reviewing Governmental Public Awareness Programs.

A variety of brochures, advertisements, press releases,

etc., are now produced by various government departments in the interests of public awareness. We believe that Policy Board should review these departmental programs with a view to identifying gaps not now being covered and to determine ways of making present programs more effective.

POLICY BOARD SHOULD REVIEW EXISTING GOVERNMENTAL PUBLIC AWARENESS PROGRAMS IN THE CONSERVATION FIELD WITH A VIEW TO IMPROVING THEIR EFFECTIVENESS.

X VOLUNTEER GROUPS

There are many volunteer groups in this province who are actively involved in conservation activities. The Wildlife Federation was instrumental in developing the momentum for a conservation strategy, Soil and Crop Improvement Associations have been active for years in promoting soil conservation, the Morell and Area Land Use Steering Committee and the Fly Fisher's Federation have been improving fish habitat, the Women's Institutes are identified with roadside clean-ups, the Rural Beautification Society is known across the continent for its efforts in homestead beautification and the Island Nature Trust pursues a variety of interests related to wildlife habitat.

The responsibility for conservation does not rest solely with government. If the conservation strategy is seen primarily as just another government program, it is likely to fail. Ways must be found to involve the whole of the Island community in the concepts of sustainable development and stewardship of resources.

Volunteer groups can play a major role in promoting public awareness of environmental issues, in carrying out remedial work in streams and on the land, and in working with government on specific problems such as soil conservation and preservation of natural areas. In an era when government budgets are limited, we believe that dollars spent in assisting these groups is money well spent since they assist volunteer labour and often result in

job creation at the community level.

The difficulties facing volunteer groups involve the availability and continuity of funding, co-ordination problems and a lack of familiarity with possible sources of support within government. Our recommendations are directed to these problems.

RECOMMENDATIONS

1. Providing Funding for Community Groups

A. A Central Fund for Conservation Projects

We believe a central fund should be established to provide seed money, materials and supplies for volunteer groups with worthwhile projects. The funds could be used to purchase seed and trees for stabilizing stream banks, rocks for spawning beds, or signs for a trail or rustic road. Grants would be small, possibly no more than $5000, but they would symbolize government's commitment to work with volunteer groups and communities in developing conservation projects. Funding could be delivered under the Conservation Centre proposed earlier.

A CONSERVATION FUND SHOULD BE ESTABLISHED TO ASSIST WORTHWHILE PROJECTS OF VOLUNTEER AND COMMUNITY GROUPS.

B. Commitment To Funding

Many volunteer groups now receive funding from

government on a regular or irregular basis. In many cases the amount varies from year to year and often is received late in the year, making proper planning difficult. We believe that such funding should be placed on at least a three-year basis, so that volunteer groups can be assured of at least a minimum level of funding for a period that will enable them to do advance planning.

FUNDING TO VOLUNTEER GROUPS NOW FUNDED FROM GOVERNMENT SHOULD BE PLACED ON A LONG TERM, STABLE BASIS.

2. Providing Expertise to Volunteer Groups

By their very nature volunteer groups are staffed by enthusiastic volunteers who devote what extra time they have to their groups. In many cases they are not aware of potential sources of funding, such as Canada Employment and Immigration Commission projects, nor of the resources which may be available to them within government, nor, in some cases, are they aware of the proper methods of implementing these projects. To those outside government, dealing with the bureaucracy is a formidable task, even within a small province. We believe government could greatly assist these groups if a person were appointed whose job is to be knowledgeable about the resources available within both the provincial and federal government and to assist these groups in developing projects eligible for government assistance. This person could be the director of the

proposed Conservation Centre.

A FACILITATOR SHOULD BE APPOINTED TO ASSIST VOLUNTEER AND COMMUNITY GROUPS IN CONSERVATION PROJECTS.

3. Promoting Co-ordination Among Volunteer Groups

If volunteer and community groups are to be strengthened through better funding and the provision of expertise, then a greater degree of co-ordination will be needed to avoid duplication of effort and to forestall conflict. We believe that the Provincial Conservation Council outlined in the next chapter should be the body responsible for that co-ordination.

A PROVINCIAL CONSERVATION COUNCIL SHOULD CO-ORDINATE THE EFFORTS OF VOLUNTEER AND COMMUNITY GROUPS.

4. Examining the Need for Conservation Districts

At many points in our deliberations suggestions were made that new units are needed at the local level to sponsor and co-ordinate efforts in conservation. Elsewhere in the continent there are a variety of governmentally created or sponsored agencies that promote conservation at a level below the province or state. In Ontario there are Conservation Authorities on a watershed basis. In the U.S. there are Soil Conservation Districts to foster soil conservation.

We believe that we are not yet in a position where it is clear whether such districts would be of value here nor of the form they should take. Certainly, experiments now taking place at the local level, such as current efforts in the Wilmot River watershed, the Montague River watershed and the work of the Morell and Area Land Use Steering Committee should be encouraged and monitored. As popular support for a conservation strategy develops, there may be a need for local mechanisms.

CURRENT EFFORTS AT LOCAL WATERSHED MANAGEMENT SHOULD BE MONITORED, WITH A VIEW TO THEIR POSSIBLE APPLICATION TO THE WHOLE OF THE PROVINCE AT A LATER DATE.

XI THE ROLE OF GOVERNMENT

The success or failure of the conservation strategy rests with the provincial government. Although the co-operation of the general public is essential, government must play a lead role in the process. If government is seen to be enthusiastic and committed, then we believe that public support will follow.

The recommendations that follow indicate how we believe government should respond, in general terms, to the chapters of the report preceding this one. We realize that all of the actions we suggest cannot be implemented immediately. We do believe that the general thrust of what we have proposed constitutes the beginnings of a successful conservation strategy that will take us into the next century.

RECOMMENDATIONS

1. Making a Strong Commitment to the Strategy

   Although it may be trite to say so, unless there is a strong public commitment to a conservation strategy from Executive Council, the strategy will fail and this report will join many others that rest inactive on dusty bookshelves. Within government itself only a strong commitment at the upper levels will be enough to ensure action at the lower levels, where the day-to-day work of program delivery takes place.

EXECUTIVE COUNCIL SHOULD MAKE A STRONG COMMITMENT TO THE IMPLEMENTATION OF THE CONSERVATION STRATEGY AND THE CONCEPT OF SUSTAINABLE DEVELOPMENT.

2. Assessing Current Priorities and Resources Within Departments

We believe it essential that departmental priorities and resources be reviewed with a view to the implementation of the strategy. Departmental employees should be knowledgeable about and supportive of the strategy. The right people should be in the right places if it is to be successful. In some cases internal re-organization of a department may be necessary. Given a strong commitment by Ministers and Deputy-Ministers, employees will be willing to give the strategy a high priority.

DEPARTMENTS SHOULD REVIEW THEIR PRIORITIES AND RESOURCES TO ENSURE THAT THEY CAN SUPPORT THE CONSERVATION STRATEGY,.

3. Providing for Better Planning and More Effective Co-ordination

The environment cannot be divided up into a number of distinct parts, each separate from the other. Government departments can be so divided. Thus, what one department proposes or approves may have strong effects on the areas under the jurisdiction of another department, yet those effects are often not adequately assessed. An agricultural

program to move water rapidly from farm fields in the spring may have strong effects on roadside ditches and may result in downstream siltation. The time to consider these effects is in the early development stages of the program, not after it has been announced and is in operation.

Given the vagaries of human nature, some of these problems will always occur. We think their incidence could be greatly reduced if the planning process within departments included a formal requirement for review with other departments before new initiatives were undertaken or major applications were approved. Policy Board should monitor all proposals reaching it to ensure that possible environmental impacts have been considered. A committee of deputy ministers of resource-related departments should be established to resolve interdepartmental conflicts and to consider new programs in their early stages.

MEANS SHOULD BE DEVELOPED TO PROVIDE FOR BETTER PLANNING WITHIN DEPARTMENTS AND FOR BETTER CO-ORDINATION BETWEEN DEPARTMENTS ON RESOURCE-RELATED ISSUES.

4. Developing A Better Relationship with Volunteer and Community Groups

Government now has a fairly good working relationship with many volunteer and community groups. We believe that there is a need for a broader grouping that goes beyond

individual associations. A Provincial Conservation Council should be established whose duties should be listed in a revised Environmental Protection Act. Its duties would include:

- reviewing progress on the conservation strategy and presenting an annual "State of the Environment" report to the Legislature
- recommending on the distribution of the conservation funds and the conservation awards outlined in Chapter X
- co-ordinating effective efforts among private groups in the field of conservation
- advising a Minister or Executive Council on new programs and policies.
- providing liaison with the proposed Conservation Centre.

The members of the Council should be representatives drawn from major interest groups across the province and should be reimbursed for expenses.

A PROVINCIAL CONSERVATION COUNCIL SHOULD BE ESTABLISHED AS AN AVISORY BODY TO GOVERNMENT.

5. Preparing New Environmental Legislation

As indicated in previous sections, new or revised legislation will be needed to implement the strategy. A

revised Environmental Protection Act and a revised Planning Act are viewed as the first steps in this process. There should be adequate public review of new legislation before it is introduced. Use of the policy statement approach, as outlined in Chapter VII, is one approach. Another would be a greater use of Committees of the Legislature prior to sessions of the Legislature.

It is clear that a quality environment requires more restrictions than we have had in the past. This carries with it the necessity to enforce legislation. In the past we have seen too many good pieces of legislation that are weakened by timidity in the enforcement area. We are encouraged by the approach this government has taken to underground storage tank legislation and the necessity for enforcement.

NEW LEGISLATION OR REVISIONS OF EXISTING LEGISLATION SHOULD BE PREPARED AND ENACTED AFTER APPROPRIATE PUBLIC SCRUTINY.

6. Developing a Provincial Crown Lands Policy

Provincial Crown land constitutes almost ten percent of our land area. Much of it was acquired by the Land Development Corporation in the first phase of the Development Plan and is scattered across the province. Although individual departments may have policies affecting the use of these lands, there is no comprehensive provincial policy for

Crown lands. Such a policy would consider the acquisition, disposal and management of Crown lands. We believe that much of this land affords an opportunity to demonstrate the merits of integrated and multiple use.

A PROVINCIAL CROWN LANDS POLICY SHOULD BE DEVELOPED TO PROVIDE FOR THE BEST USE OF THESE LANDS.

7. Emphasizing Visible Demonstration Projects

In the early stages of the conservation strategy, emphasis should be placed on highly visible projects that demonstrate the benefits of conservation. Several are suggested in this report - a stream habitat enhancement project, a salmon and trout enhancement program, a trails development project. Emphasizing these projects, and others that can be funded as CEIC projects, will create a greater public awareness of the strategy as well as providing useful employment.

VISIBLE DEMONSTRATION PROJECTS SHOULD BE IMPLEMENTED TO ENHANCE THE STRATEGY AND CREATE EMPLOYMENT.

8. Increasing Funding for Conservation Initiatives

We recognize that many of the recommendations contained in this report carry a price tag. Attaining a position of sustainable development cannot be reached without cost. We suggest that there are a number of areas to be explored for

additional funding.

As the first province in Canada to formally adopt a conservation strategy, a concept endorsed nationally by Environment Canada, we believe that additional federal funds should be available for its support. A Memorandum of Understanding on conservation and development is now approaching completion and should be a useful tool in this direction.

Various ERDA agreements and federal-provincial agreements on water and wildlife should be re-examined with the expectation that existing funds could be re-allocated to support the strategy. In 1989, when new ERDA agreements are up for negotiation, a major effort should be made to include conservation funding.

Various possibilities are open at the provincial level, including the designation of hunting and fishing license fee increases for conservation purposes, as recently urged by the P.E.I. Wildlife Federation; the use of a 10 percent levy on new cottage lot approvals; a tax on non-resident owned land, and a small surcharge on all real estate transactions to be used for land acquisition and management. A Conservation Lands Funds, as proposed by the Island Nature Trust, should be explored; it would use funds derived from the sale of surplus Crown lands to purchase

threatened ecological areas.

A VARIETY OF NEW INITIATIVES SHOULD BE EXPLORED TO FUND THE CONSERVATION STRATEGY.

9. Appointing a Strategy Co-ordinator

If the conservation strategy is to succeed, then there must be a focal point within government responsible for its success. We believe that this focal point should be a person, a Strategy Co-ordinator. The person's responsibilities should include:

- translating this report into an action plan with short term, intermediate term and long term activities
- acting as a staff person to both the Provincial Conservation Council and the committee of resource-related deputy ministers
- involvement in the negotiation of various federal-provincial funding agreements related to resource use
- assisting in the co-ordination of conservation activities among departments and with the federal government
- acting as a spokesperson for the conservation strategy.

This would be a senior position with heavy responsibilities. Without the creation of such a position, there is a strong likelihood that the strategy will become so

diffuse that it will be unrecognizable within a few years.

A STRATEGY CO-ORDINATOR SHOULD BE APPOINTED TO SERVE AS A FOCAL POINT FOR THE IMPLEMENTATION OF THE STRATEGY.

XII CONCLUSIONS

This document represents a first step towards a conservation strategy. Its recommendations are the result of a process extending over an eight-month period involving fifty people. It demonstrates that a diverse group of farmers, fishermen, academics, public servants and others can come together and, through debate and discussion, reach general agreement on a series of goals relating to conservation and sustainable development.

We stress that this document is only a first step in a very long process. The recommendations outlined here cannot all be attained quickly. Some can be reached in a few years or less; others may take as long as a generation. Reaching the goals of the strategy implies a long term commitment, both by this government and those that follow it.

If the strategy is to be successful, government must play a lead role in it. Its departments must provide models for wise resource use. It must provide for continuing public dialogue, participation and involvement as the strategy evolves.

The next stage in the process, as we view it, is two-fold. Government should endorse it in principle and then release it, in a form described earlier, for public scrutiny to ensure that its goals are generally acceptable. At the same time, government

should prepare an action plan for its long term implementation, identifying people and resources necessary to develop and implement new programs and legislation and to secure public involvement in the implementation process.

A conservation strategy is an opportunity to integrate conservation and economic development, to demonstrate that these two concepts need not conflict but can proceed in harmony. The challenge is to manage and use on a sustainable basis the renewable resources on which our economy is based. We are convinced that the best future for our province lies in the maximum development of our sustainable resources to generate meaningful full-time employment.

APPENDIX A

A. Summary of Recommendations

The following is a listing of the specific recommendations in this report organized on the basis of chapter and subject headings.

II AGRICULTURE

1. Existing Soil Erosion Programs.

THE EXISTING SOIL AND WATER CONSERVATION PROGRAM SHOULD BE REVIEWED WITH A VIEW TO DETERMINING REASONS FOR ITS LACK OF ACCEPTANCE. NECESSARY CORRECTIVE ACTION SHOULD THEN BE TAKEN.

IN ANY REVISION OF PRESENT PROGRAMS OR NEW PROGRAMS TO BE DEVELOPED, REALISTIC TARGETS SHOULD BE SET FOR HECTARES OF LAND TO BE BROUGHT UNDER THE PROGRAMS EACH YEAR. IF A PROGRAM DOES NOT MEET THE TARGET WITHIN A TWO OR THREE YEAR PERIOD, THEN THE PROGRAM SHOULD BE REVIEWED AGAIN TO DETERMINE THE BASIS FOR ITS LACK OF ACCEPTANCE.

2. Research and Demonstration

THE GREATEST SINGLE PROGLEM IN SOIL CONSERVATION IS THE BARE-SOIL-OVER-WINTER PROBLEM ASSOCIATED WITH POTATO GROWING. IT MUST BE ADDRESSED BOTH IN TERMS OF RESEARCH AND EFFECTIVE DEMONSTRATION PROJECTS DEALING WITH COVER

CROPPING, SOIL MULCHING, WATER CHANNELING AND ROTATION PRACTICES. A SEARCH OF EXISTING TECHNOLOGY AND RESEARCH NEEDS TO BE CARRIED OUT ON POTATO MACHINERY. PRESENT HARVESTERS OPERATE BEST UP AND DOWN SLOPES; ONES THAT OPERATE EFFICIENTLY ACROSS SLOPES WOULD DECREASE RUN-OFF PROBLEMS.

3. Extension Services

EXTENSION SERVICES OF THE DEPARTMENT OF AGRICULTURE SHOULD BE UPGRADED TO PROVIDE GREATER EXPERTISE IN SOIL CONSERVATION. MORE ASSISTANCE SHOULD BE PROVIDED TO SOIL AND CROP IMPROVEMENT ASSOCIATIONS.

4. Assistance to Farmers

GOVERNMENT MUST BE READY TO FUND SOIL CONSERVATION PROGRAMS AT WHATEVER LEVEL IS NECESSARY TO ENSURE THAT CONSERVATION PRACTICES ARE IN PLACE ON FARMS. FINANCIAL AID PACKAGES MUST BE AVAILABLE TO ALL FARMERS WHO WISH TO IMPROVE THEIR SOIL CONSERVATION PRACTICES, ON TERMS THAT ALLOW THE AVERAGE FARMER TO USE THEM.

SUPPLY MANAGEMENT PROGRAMS THAT WOULD PROVIDE STABLE INCOMES TO PRODUCERS SHOULD BE SUPPORTED.

III FORESTRY

1. Twenty Year Forest Development Plan

THE PROVINCE SHOULD ADOPT THE TWENTY YEAR PLAN IN PRINCIPLE, SUBJECT TO MODIFICATIONS RESULTING FROM THE PUBLIC REVIEW PROCESS AND THE RECOMMENDATIONS OUTLINED BELOW. THE PLAN SHOULD BE REVIEWED PERIODICALLY THROUGHOUT ITS DURATION.

2. Preventing Soil Erosion

EXISTING STANDARDS AND GUIDELINES SHOULD CONTINUE TO BE ENFORCED IN CONSTRUCTION OF ACCESS ROADS, BRIDGES AND CULVERTS IN FORESTS, AND IN THE PREPARATION OF SITES FOR PLANTING AND HARVESTING, TO MINIMIZE SOIL EROSION FROM ACTIVITIES WITHIN THE FOREST.

3. Enhancing Wildlife

FOREST MANAGEMENT PLANS AND PROGRAMS SHOULD CONTAIN GUIDELINES FOR WILDLIFE IMPROVEMENT. FORESTRY EXTENSION WORKERS SHOULD BE AWARE OF AND PROMOTE WILDLIFE ENHANCEMENT WHEN ADVISING PRIVATE WOODLOT OWNERS AND WHEN WORKING ON CROWN LANDS.

4. Hedgerow and Greenbelt Programs

THE HEDGEROW/SHELTERBELT PROGRAM SHOULD BE ENHANCED TO PROVIDE GREATER PUBLIC AWARENESS OF ITS VALUE AND TO ENSURE THAT THOSE RECEIVING STOCK PLAY THEIR PART DURING

THE ESTABLISHMENT OF THE STOCK. THE USE OF GREENBELTS FOR STREAM BANK STABILIZATION AND AS WILDLIFE HABITAT SHOULD BE PROMOTED.

THE PROGRAM SHOULD INCLUDE PRODUCTION OF DESIRABLE SPECIES TO MEET THE NEEDS OF AN EXPANDED GREENBELT PROGRAM. CROWN WOODLOTS SHOULD BE USED AS NATURAL SOURCES FOR LARGER DESIRABLE SPECIES. RENOVATION OF EXISTING HEDGEROWS SHOULD BE PROMOTED, AS WELL AS THE ESTABLISHMENT OF NEW ONES.

5. Crown Land Reserve

MANAGEMENT PLANS FOR CROWN LANDS, INCORPORATING SOUND PRINCIPLES OF INTEGRATED RESOURCE MANAGEMENT, SHOULD BE IMPLEMENTED WITH ADEQUATE RESOURCES AND SHOULD BE CONSIDERED AS A COMPONENT OF THE TWENTY YEAR FOREST DEVELOPMENT PLAN.

6. Species Balance

THE FOREST RENEWAL PROGRAM SHOULD ENSURE INCREASED DEVELOPMENT AND USE OF HARDWOOD SPECIES. IT SHOULD ATTEMPT TO MINIMIZE LARGE ACREAGES COMPOSED OF SINGLE SPECIES STANDS WHICH ARE MORE PRONE TO INSECT INFESTATIONS.

IV TRANSPORTATION

1. Scheduling Construction and Maintenance Operations

GOVERNMENT SHOULD ADOPT AS A GOAL THAT NO ERODIBLE SURFACE SHOULD BE LEFT UNCOVERED OVER WINTER. ANNUAL ROAD CONSTRUCTION AND MAINTENANCE SCHEDULES SHOULD BE DRAWN UP WITH THE GOAL OF MINIMIZING SOIL EROSION. SEEDING OF BARE SLOPES SHOULD BE COMPLETED BY SEPTEMBER 15 IN A NORMAL YEAR.

THE DEPARTMENT'S HYDROSEEDER IS NOW USED EXTENSIVELY. ONE MACHINE AND EXISTING STAFF IS INADEQUATE TO STABILIZE ALL SITES DURING THE OPTIMUM PERIOD FOR GRASS GROWTH. ADDITIONAL FUNDING FOR EQUIPMENT AND PERSONNEL FOR OPERATION OF HYDROSEEDERS AND MAINTENANCE OF SILT TRAPS WILL BE REQUIRED.

2. Co-ordination with other Groups

THE DEPARTMENT MUST GIVE A HIGHER PRIORITY TO EROSION CONTROL AND CO-OPERATE FULLY WITH OTHER GOVERNMENT DEPARTMENTS, LOCAL LANDOWNERS, AND COMMUNITY GROUPS IN THEIR EFFORTS TO CONTROL EROSION.

3. Design of Drainage Outlets

THE DEPARTMENT SHOULD INVESTIGATE IMPROVED METHODS OF DRAINAGE CONSTRUCTION THAT WILL ASSIST IN EROSION CONTROL.

4. Other Remedial Measures

THE DEPARTMENT MUST ATTEMPT TO ELIMINATE TO THE MAXIMUM EXTENT POSSIBLE THE FLOW OF THE PRODUCTS OF EROSION INTO STREAMS AND ESTUARIES.

5. Causeways

THE DEPARTMENT SHOULD DESIGN AND MODIFY EXISTING CAUSEWAYS TO INCREASE WATER FLOW THROUGH ESTUARIES. FUTURE ESTUARY CROSSINGS SHOULD BE DESIGNED TO MAXIMIZE WATER FLOW.

V FISH AND WILDLIFE

1. Habitat Management

A. Conservation Centre

A CONSERVATION CENTRE SHOULD BE ESTABLISHED TO PROMOTE AND CO-ORDINATE HABITAT RESTORATION AND RESOURCE DEVELOPMENT INITIATIVES ON PRINCE EDWARD ISLAND. WORK TO REHABILITATE OUR WATER SYSTEMS SHOULD COMMENCE IN THE SUMMER OF 1987.

B. Demonstration Projects

DEMONSTRATION PROJECTS ILLUSTRATING THE BENEFIT OF VARIOUS MANAGEMENT TECHNIQUES FOR ENHANCING WILDLIFE SHOULD BE ESTABLISHED WITH INITIAL EMPHASIS WITHIN THE MONTAGUE WATERSHED.

C. Applied Research and Monitoring

ADEQUATE RESOURCES SHOULD BE MADE AVAILABLE TO CONDUCT THE RESEARCH AND MONITORING NECESSARY FOR WISE MANAGEMENT OF OUR FISH AND WILDLIFE RESOURCES.

D. Integrated Planning

INTEGRATED LONG TERM FISH AND WILDLIFE MANAGEMENT PLANS SHOULD BE DRAFTED FOR EACH OF OUR MAJOR WATERSHEDS.

2. Population Management

A. Trout and Salmon Enhancement

THE FEDERAL AND PROVINCIAL GOVERNMENTS SHOULD ENTER INTO AN INLAND SPORTS FISHERIES AGREEMENT TO SUPPORT ENHANCEMENT PROGRAMS FOR TROUT AND SALMON, INCLUDING THE EXPANSION OF THE CURRENT ATLANTIC SALMON ENHANCEMENT PROGRAM, THE DEVELOPMENT AND ENHANCEMENT OF SEA-RUN BROOK TROUT FISHERIES, AND THE ADOPTION OF A TROUT STOCKING POLICY.

THE FIRST OF SEVERAL SEMI-NATURAL PONDS SHOULD BE BUILT IN 1987 AND EFFORTS SHOULD BE MADE TO ENSURE THAT ADEQUATE MANPOWER AND RESOURCES ARE AVAILABLE TO OPERATE THE CARDIGAN FISH CULTURE STATION AT ITS FULL POTENTIAL.

B. Waterfowl Management

THE P.E.I. WATERFOWL MANAGEMENT PLAN SHOULD BE ADOPTED AND IMPLEMENTED.

C. Management of Wildlife Species

WILDLIFE SPECIES SHOULD BE MANAGED TO ENSURE ACCEPTABLE POPULATION LEVELS.

3. Habitat Protection

A. Fish Habitat

THE P.E.I. ENVIRONMENTAL PROTECTION ACT SHOULD BE REVISED TO INCLUDE:

(I) THE NECESSITY OF A PERMIT FOR THE ALTERATION OF A STREAM OR WATER BODY

(II) WATER QUALITY STANDARDS FOR THE DISCHARGE OF EFFLUENTS INTO A WATER BODY.

FISHERIES AND OCEANS' FISH HABITAT MANAGEMENT POLICY SHOULD BE OFFICIALLY ENDORSED AND APPLIED TO THE FUTURE MANAGEMENT OF THE PROVINCE'S INLAND WATER SYSTEMS.

B. Wetlands

A POLICY FOR THE CONTINUED NATURAL FUNCTIONING OF WETLANDS SHOULD BE DEVELOPED, INCLUDING A FEDERAL-PROVINCIAL AGREEMENT FOR THE DESIGNATION OF SITES. THE PLANNING ACT REGULATIONS SHOULD BE AMENDED TO PROTECT WETLANDS.

C. Ecological Reserves

THE GOVERNMENT SHOULD MAKE A COMMITMENT TO PROTECT ENVIRONMENTALLY SIGNIFICANT SITES IN THIS PROVINCE. THIS MUST INCLUDE THE IDENTIFICATION OF MANPOWER AND FINANCIAL

RESOURCES TO ADEQUATELY MANAGE THESE SITES.

THE GOVERNMENT SHOULD CONSOLIDATE SITES WHICH IT MANAGES UNDER ONE AGENCY TO ENSURE CO-ORDINATED AND EFFECTIVE MANAGEMENT.

AN ECOLOGICAL RESERVES ACT SHOULD BE DEVELOPED FOR THIS PROVINCE TO PROVIDE THE NEEDED PROTECTION FOR ENVIRONMENTALLY SIGNIFICANT AREAS.

VI COASTAL ZONE

1. Providing for Sustainable Use

GOVERNMENT SHOULD DEVELOP REMEDIAL PROGRAMS TO REDUCE SILTATION AND OVERENRICHMENT FROM POINT AND NON-POINT SOURCES IN ESTUARIES.

2. Avoiding Conflict Among Users

A. Designation of Large Water Bodies

THE DESIGNATION PROCESS DEVISED BY THE DEPARTMENT OF FISHERIES AND OCEANS SHOULD BE SUPPORTED, WITH THE UNDERSTANDING THAT ALL USER GROUPS WILL BE FULLY CONSULTED BEFORE IT IS PUT INTO PLACE.

B. Water Resources Avisory Council

A WATER RESOURCES ADVISORY COUNCIL SHOULD BE ESTABLISHED

TO ADVISE GOVERNMENT ON CO-ORDINATED RESOURCE USE AND ENSURE THAT USER GROUPS HAVE ADEQUATE INPUT INTO THE DECISION-MAKING PROCESS.

3. Providing for Research and Monitoring

APPLIED RESEARCH AND MONITORING DIRECTED AT SUSTAINABLE DEVELOPMENT OF RESORUCES IN ESTUARIES IS ESSENTIAL. THESE ACTIVITIES SHOULD INCLUDE: MONITORING RATES OF SEDIMENTATION, WATER QUALITY, STOCKS AND HABITATS OF FISH AND SHELLFISH AND CARRYING OUT RESEARCH IN GROWTH RATES, GENETICS, DISEASE AND COMPETITION PROBLEMS IN FISH AND SHELLFISH POPULATIONS.

4. Developing Recreational Resources

RECREATIONAL OPPORTUNITIES SHOULD BE ENCOURAGED WITHIN THE COASTAL ZONE AS ONE ELEMENT WITHIN A CO-ORDINATED FRAMEWORK TO BE DEVELOPED IN CONSULTATION WITH A PROPOSED WATER RESOURCES ADVISORY COUNCIL.

5. Regulating Sand Mining

SAND MINING IS A LEGITIMATE ACTIVITY IN AREAS THAT HAVE BEEN CLEARLY IDENTIFIED FOR EXTRACTION WITHOUT ADVERSE HARM TO EXISTING BEACHES. SPECIAL ATTENTION SHOULD BE PAID TO THE MANNER IN WHICH THE SAND IS EXTRACTED, TO RESOLVE CONFLICTS BETWEEN EXTRACTORS, LOCAL RESIDENTS AND COLONIAL NESTING SPECIES.

6. Controlling Coastal Erosion

A HANDBOOK FOR THE USE OF PROPERTY OWNERS SHOULD BE DEVELOPED. IT SHOULD CONTAIN INFORMATION ON THE CAUSES AND CONTROL OF SHORELINE EROSION.

VII LANDSCAPE, LAND USE PLANNING AND TOURISM

A. Land Use Planning

1. Improving the Land Use Planning Process

A. Environmental Considerations

ENVIRONMENTAL CONSIDERATIONS SHOULD PLAY A GREATER ROLE IN THE LAND USE PLANNING PROCESS. ALL RESOURCE-RELATED DEPARTMENTS OF GOVERNMENT SHOULD BE CONSULTED AND INVOLVED IN THE DEVELOPMENT OF LAND USE POLICIES.

B. Areas under Provincial Jurisdiction

THE PLANNING ACT AND ITS REGULATIONS SHOULD BE REVIEWED TO ADDRESS CONSERVATION ISSUES IN THE DEVELOPMENT PROCESS. THE REVIEW SHOULD INCLUDE MAJOR LAND USE ISSUES AS WELL AS INNOVATIVE APPROACHES TO THE CONTROL OF DEVELOPMENT IN AREAS OF PROVINCIAL SIGNIFICANCE. THE REVIEW SHOULD INCLUDE A STRONG COMMITMENT TO MONITORING AND ENFORCEMENT.

C. Provincial Guidelines for Official Plans

THE OFFICIAL PLAN APPROVAL PROCESS REQUIRES PROVINCIAL

STANDARDS THAT MUST BE MET BEFORE A PLAN CAN BE APPROVED.

D. Policy Statements

CLEAR POLICY STATEMENTS SHOULD BE PROVIDED FOR PUBLIC SCRUTINY BEFORE ENACTMENT. THE POLICY STATEMENT APPROACH USED IN OTHER PROVINCES SHOULD BE ADAPTED TO ISLAND NEEDS.

E. Reducing Visual Pollution

GOVERNMENT SHOULD CONTINUE TO SUPPORT MEASURES THAT WOULD REDUCE VISUAL POLLUTION OF THE LANDSCAPE.

B. Tourism

1. Developing Rustic Roads

A SYSTEM OF RUSTIC ROADS SHOULD BE DEVELOPED.

2. Developing Trail Systems

TRAIL SYSTEMS SHOULD BE DEVELOPED AT SEVERAL LOCATIONS THROUGHOUT THE PROVINCE. RESTORATION OF THE BONSHAW TRAIL SHOULD BE UNDERTAKEN DURING THE SUMMER OF 1987.

3. Developing Scenic Lookouts and Observation Towers

SCENIC LOOKOUTS AND OBSERVATION TOWERS AT WILDLIFE SITES SHOULD BE CONSTRUCTED AT KEY LOCATIONS THROUGHOUT THE PROVINCE.

VIII WATER MANAGEMENT AND POLLUTION CONTROL

1. Preventing Groundwater Contamination

A. Protection of Groundwater Quality

SOUND PLANNING AND MANAGEMENT IS REQUIRED TO MINIMIZE THE EFFECTS OF POINT SOURCE CONTAMINATION. THE PUBLIC MUST BE ASSURED OF THE LONG TERM VIABILITY OF OUR GROUNDWATER QUALITY THROUGH APPROPRIATE MONITORING PROGRAMS.

B. Well Construction Techniques

THE PROVINCIAL WELL DRILLER'S ACT SHOULD BE AMENDED TO REFLECT CURRENT AND FUTURE NEEDS. APPROPRIATE ENFORCEMENT CAPACITY SHOULD BE PROVIDED.

C. Water and Sewage Systems

EFFORTS SHOULD BE INCREASED TO ENSURE THAT NO UNTREATED SEWAGE FLOWS DIRECTLY INTO WATER BODIES. THE PROBLEM OF AGING WATER AND SEWAGE SYSTEMS SHOULD BE ADDRESSED AS A MATTER OF URGENCY.

D. Agricultural Contamination

THE DEPARTMENT OF AGRICULTURE, IN CONJUNCTION WITH THE DEPARTMENT OF COMMUNITY AND CULTURAL AFFAIRS, SHOULD REVIEW THE PROBLEM OF AGRICULTURAL CONTAMINATION OF WATER SUPPLIES.

2. Disposing of Hazardous Wastes

A SYSTEM FOR THE COLLECTION, STORAGE AND ULTIMATE

OUT-OF-PROVINCE TRANSFER OF HAZARDOUS WASTES SHOULD BE DEVELOPED. INDUSTRIAL USERS OR PRODUCERS OF HAZARDOUS WASTES SHOULD BE MADE AWARE OF THE RISKS POSED BY EXPOSURE TO THESE SUBSTANCES, AND THE DAMAGING EFFECTS ON THE ENVIRONMENT OF IMPROPER DISPOSAL.

3. Improving Air Quality

A. Long Range Transport of Air Pollutants

THE PROVINCE SHOULD STRONGLY SUPPORT THE EFFORTS OF THE FEDERAL GOVERNMENT TO REDUCE AMOUNTS OF AIR POLLUTANTS IN THE ATMOSPHERE.

B. Local Emissions

AIR QUALITY STANDARDS FOR ASPHALT PLANTS AND OTHER INDUSTRIES WHICH EMIT POLLUTANTS SHOULD BE ENFORCED.

4. Environmental assessment and Review

A FORMAL ENVIRONMENTAL ASSESSMENT AND REVIEW PROCESS SHOULD BE ADOPTED WITHIN GOVERNMENT TO ENSURE THAT AN ENVIRONMENTAL REVIEW IS GIVEN TO EACH MAJOR DEVELOPMENT PROGRAM AND PROPOSAL. THIS REVIEW MUST BE APPLIED TO DEVELOPMENTS IN MUNICIPALITIES HAVING OFFICIAL PLANS AS WELL AS TO DEVELOPMENTS IN RURAL AREAS.

IX ENVIRONMENTAL EDUCATION AND PUBLIC AWARENESS

A. Environmental Education

WE STRONGLY RECOMMEND THAT THE PROVINCE DEVELOP AN INTEGRATED, SCIENCE-BASED PROGRAM OF ENVIRONMENTAL AND RESOURCE EDUCATION APPROPRIATE TO PRINCE EDWARD ISLAND. WE BELIEVE THAT THE PRESENT PROGRAMS SHOULD BE EVALUATED BY AN INDEPENDENT AGENCY (SUCH AS THE INSTITUTE OF ISLAND STUDIES), THAT CURRICULUM, SCHEDULING, TEACHER TRAINING AND ALL OTHER FACETS SHOULD BE RECONSIDERED WITH THE OBJECTIVE OF ENSURING THAT ALL STUDENTS ARE PROVIDED WITH A SOUND EDUCATION IN NATURAL RESOURCES.

B. Public Awareness

1. Providing a Conservation Strategy Report and Videotape

A REPORT AND VIDEOTAPE ON THE CONSERVATION STRATEGY SHOULD BE PRODUCED AND MADE AVAILABLE FOR PUBLIC USE.

2. Providing Conservation Awards

A SYSTEM OF ANNUAL CONSERVATION AWARDS SHOULD BE DEVELOPED TO PROVIDE RECOGNITION TO THOSE WHO HAVE MADE NOTEWORTHY CONTRIBUTIONS AND TO HEIGHTEN AWARENESS OF CONSERVATION ACTIVITIES.

3. Providing a Conservation Newsletter

A CONSERVATION NEWSLETTER SHOULD BE PUBLISHED ON A REGULAR BASIS.

4. Reviewing Governmental Public Awareness Programs

POLICY BOARD SHOULD REVIEW EXISTING GOVERNMENTAL PUBLIC AWARENESS PROGRAMS IN THE CONSERVATION FIELD WITH A VIEW TO IMPROVING THEIR EFFECTIVENESS.

X VOLUNTEER GROUPS

1. Providing Funding for Community Groups

A. A Central Fund for Conservation Projects

A CONSERVATION FUND SHOULD BE ESTABLISHED TO ASSIST WORTHWHILE PROJECTS OF VOLUNTEER AND COMMUNITY GROUPS.

B. Commitment to Funding

FUNDING TO VOLUNTEER GROUPS NOW FUNDED FROM GOVERNMENT SHOULD BE PLACED ON A LONG TERM, STABLE BASIS.

2. Providing Expertise to Volunteer Groups

A FACILITATOR SHOULD BE APPOINTED TO ASSIST VOLUNTEER AND COMMUNITY GROUPS IN CONSERVATION PROJECTS.

3. Promoting Co-ordination Among Volunteer Groups

A PROVINCIAL CONSERVATION COUNCIL SHOULD CO-ORDINATE THE EFFORTS OF VOLUNTEER AND COMMUNITY GROUPS.

4. Examining the Need for Conservation Districts

CURRENT EFFORTS AT LOCAL WATERSHED MANAGEMENT SHOULD BE

MONITORED, WITH A VIEW TO THEIR POSSIBLE APPLICATION TO THE WHOLE OF THE PROVINCE AT A LATER DATE.

XI THE ROLE OF GOVERNMENT

1. Making a Strong Commitment to the Strategy

EXECUTIVE COUNCIL SHOULD MAKE A STRONG COMMITMENT TO THE IMPLEMENTATION OF THE CONSERVATION STRATEGY AND THE CONCEPT OF SUSTAINABLE DEVELOPMENT.

2. Assessing Current Priorities and Resources Within Departments

DEPARTMENTS SHOULD REVIEW THEIR PRIORITIES AND RESOURCES TO ENSURE THAT THEY CAN SUPPORT THE CONSERVATION STRATEGY.

3. Providing for Better Planning and More Effective Co-ordination

MEANS SHOULD BE DEVELOPED TO PROVIDE FOR BETTER PLANNING WITHIN DEPARTMENTS AND FOR BETTER CO-ORDINATION BETWEEN DEPARTMENTS ON RESOURCE-RELATED ISSUES.

4. Developing a Better Relationship with Volunteer and Community Groups

A PROVINCIAL CONSERVATION COUNCIL SHOULD BE ESTABLISHED AS AN ADVISORY BODY TO GOVERNMENT.

5. Preparing New Environmental Legislation

NEW LEGISLATION OR REVISIONS OF EXISTING LEGISLATION SHOULD BE PREPARED AND ENACTED AFTER APPROPRIATE PUBLIC SCRUTINY.

6. Developing a Provincial Crown Lands Policy

A PROVINCIAL CROWN LANDS POLICY SHOULD BE DEVELOPED TO PROVIDE FOR THE BEST USE OF THESE LANDS.

7. Emphasizing Visible Demonstration Projects

A VARIETY OF NEW INITIATIVES SHOULD BE EXPLORED TO FUND THE CONSERVATION STRATEGY.

8. Increasing Funding for Conservation Initiatives

VISIBLE DEMONSTRATION PROJECTS SHOULD BE IMPLEMENTED TO ENHANCE THE STRATEGY AND CREATE EMPLOYMENT.

9. Appointing a Strategy Co-ordinator

A STRATEGY CO-ORDINATOR SHOULD BE APPOINTED TO SERVE AS A FOCAL POINT FOR THE IMPLEMENTATION OF THE STRATEGY.

APPENDIX B

List of Participants in Provincial Conservation Strategy

Co-ordinating Committee:

A co-ordinating committee directed the preparation of the strategy. Its members were:

John McClellan, Chairman

Joseph Arbour
Paul Gallant
Diane Griffin
Daryl Guignion
Dr. Ian MacQuarrie
Arthur Smith
Peter Townshend

Bruce Smith, Secretary

Dr. Douglas Pollard of the Canadian Forestry Service, Ottawa, was seconded to the committee for three months to provide assistance.

Working Groups:

Working groups were formed by the co-ordinating committee to identify problems and propose solutions within five broad subject areas. Their reports were used by the co-ordinating committee to develop the conservation strategy. The individual reports are available upon request.

The working groups and their members were:

Soil Degradation and Conservation

Dr. Ian MacQuarrie, Chairman

Katherine Edward	Peter Townshend
John McClellan	Conrad Veer
Chris Pharo	Bertram Webster
Dr. Awni Raad	

Bruce Smith, Secretary

Water and Wildlife Management

Daryl Guignion, Co-Chairman

Arthur Smith, Co-Chairman

Robert Barwise	Paul Gallant
Rory Francis	Pat LeBlanc
Wayne Gairns	Al Smith

Bruce Smith, Secretary

Water Quality and Pollution Control

John McClellan, Chairman

Donald Champion	Arthur Hiscock
Joseph Coady	Dr. Leon Loucks
David Crandall	Dr. Ian MacQuarrie
Dr. Regis Duffy	Dr. Leith Thompson
Rory Francis	Donna Waddell

Bruce Smith, Secretary

Landscape Protection

Diane Griffin, Chairman

Harry Baglole	Deborah Hearn
Wayne Barrett	John McClellan
Keith Brehaut	Paul Michael
Rosemary Curley	Allan Rankin
Donald Deacon	Irene Rogers

Bruce Smith, Secretary

Coastal Zone Management

John McClellan, Chairman

Michael Fitzgerald	Clair Murphy
Daryl Guignion	Stanley Vass
Irwin Judson	George Vessey
Allan Morrison	William Warren

Bruce Smith, Secretary

In addition to the foregoing, numerous other persons from provincial and federal departments and from the private sector provided assistance to the working groups on one or more occasions.